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S. HRG. 103-412

SUPERFUND REAUTHORIZATION

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Superfund Reauthorization, S.Hrg. 1...

HEARINGS

BEFORE THE

SUBCOMMITTEE ON SUPERFUND, RECYCLING, AND SOLID WASTE MANAGEMENT

OF THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS UNITED STATES SENATE

ONE HUNDRED THIRD CONGRESS

FIRST SESSION

MAY 6, AND 12; JUNE 10; JULY 28; SEPTEMBER 9, AND 30; NOVEMBER 4, 1993

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SUPERFUND REAUTHORIZATION

THURSDAY, MAY 6, 1993

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON SUPERFUND, RECYCLING, AND
SOLID WASTE MANAGEMENT,
Washington, DC.

HEALTH AND ECOLOGICAL IMPACTS OF SUPERFUND SITES

The subcommittee met, pursuant to notice, at 10:32 a.m. in room 406, Dirksen Senate Office Building, Hon. Frank R. Lautenberg [Chairman of the subcommittee] presiding.

Present: Senators Lautenberg, Graham, Boxer, Smith, and Baucus.

OPENING STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM THE STATE OF MONTANA

Senator BAUCUS [assuming Chair]. The subcommittee will come to order.

This is the first of a series of subcommittee hearings on Superfund, recycling, and solid waste issues, chaired by Senator Lautenberg. Senator Lautenberg has scheduled a long series of hearings. He is unable to be here at this time. We expect him to arrive shortly. He has asked me to begin this hearing, and I will do so.

As I said, this is the beginning of a series of many hearings on this issue. We all know how important it is to reauthorize Superfund in a realistic, meaningful way. There are many witnesses scheduled for the series of hearings. The witnesses today are, I think, an excellent way to focus precisely on the problems of many toxic waste sites in our country, and I thank the witnesses for coming and participating with us.

It's important, though, with all the attention on the problems with Superfund, and there are many, for us to remember that it's easy to lose sight of the reasons why we need Superfund. Many of my colleagues are terribly concerned about the program. I know I am. It's been almost 13 years now since we created Superfund, but we have little to show for our efforts. We have identified over 36,000 contaminated sites across the country, characterized well over 90 percent of them, taken emergency action at 3,000 of the most seriously contaminated. But beyond this, we have not made much progress.

Some 1,200 toxic sites have been listed for long-term Superfund clean-up. Only 150 have been cleaned up. And while work has begun at many sites, each site is taking longer and costing more to

clean up. It now takes at least 9 years for the average site to be cleaned up, at a cost of $30 million, and 15 to 30 percent of the money goes to lawyers.

But before we decide how to improve the program, it is important that we understand why we need Superfund, and I'm pleased that Senator Lautenberg has focused his first of a series of hearings on Superfund on this very question—that is, why we need Superfund.

It should come as no surprise to anyone that the 1980 Superfund law was not the result of a thorough scientific analysis. It was borne out of a crisis. A series of incidents in the late 1970's, like Love Canal, Valley of the Drums, and Times Beach, grabbed the public's attention. In an effort to respond to these problems, in 1980 the Congress created Superfund.

In the nearly 13 years that have passed, we have learned a great deal. We now know much more about the magnitude of the problem and about the threats from uncontrolled toxic waste dumps. We know that toxic industrial solvents, like benzene, toluene, trichloroethylene, are prevalent at most Superfund sites. We know that lead, one of the most harmful and persistent metals, especially to children, has been found in two-thirds of all Superfund sites. We know that over a third of all Superfund sites pose a public health concern right now. And we know that even at sites that have already been cleaned up, it may be too late to prevent previously exposed people from getting sick.

The lesson from these findings is quite simple: We must stop the bickering, stop the unnecessary litigation, and clean up these sites as quickly as we can. This is not to say that we can't improve upon the program. We can, and we must. For starters, we should set our sights on three goals. First, we must change Superfund's incentives so that more money is spent cleaning up sites and less spent making attorneys wealthy. When as much as 30 cents out of every $1 is spent on litigation and not on clean-up, something is wrong.

Next, we must make Superfund more fair, especially to those who contributed very little to the problem. These de minimis contributors are now often the targets of lawsuits from large corporations, and litigation saps time, money, and attention away from the cleaning up of toxic sites.

Finally, we must set realistic expectations, especially when it comes to site clean-up. Many problems were created over decades, and they can't be cleaned up overnight. But we can clean up the hot spots in short order, and we should focus our efforts on solving the worst problems first.

We must also recognize that cleaning up every last drop is not always technically feasible, but it may because feasible in perhaps 20 years from now. So rather than require the be-all and end-all solution now, when it's not possible, we should do the best we can now and search for silver-bullet solutions later.

Superfund is still in its adolescence. After 13 years, it is clear that Superfund needs some discipline, some direction, some nurturing. We must all use these hearings wisely so we can strike the right balance. We must challenge all of our witnesses to describe where the program is working well and enumerate where it's broken. Most of all, we must put aside our emotions and be willing

to engage in an open exchange of ideas. To that end, we must not prejudge any suggestion, as unusual as it may be, and tempting as that may be to some, we must carefully consider all views and all viable proposals so we can come up with the best solution.

Senator Lautenberg has a statement that will be included in the record at this point.

[Senator Lautenberg's statement follows:]

PREPARED STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Good morning. Today we begin the first in a series of intensive hearings in Washington to review the operation of the federal Superfund law for cleaning up toxic waste sites.

Today, the Superfund program is one of the most controversial and often criticized of federal environmental programs. My subcommittee will be devoting much of its time this year to reviewing this important law and deciding how it can be improved.

As we go about making the necessary reforms to the Superfund program, we must keep our eyes focused always on what is really at stake for the health of our citizens. We have a duty to make the tough changes that need making. But we also have a duty to the 41 million Americans who live within 4 miles of a Superfund site and whose health and lives may depend on its success.

Today we will hear from just a few of those people about the vivid reality of what it really means to live near a Superfund site. Cancer clusters, severe or even fatal birth defects, miscarriages, respiratory and neurological problems, and all the financial and emotional trauma of being continually exposed to the chemicals that are causing these problems but not being able to sell your devalued home and escape—this is the reality that millions of our constituents face at these sites. The problem may be even worse for people of color living near these sites, based on studies showing that their sites are not being cleaned up as quickly or thoroughly as in other communities.

As Congress makes crucial decisions about the future of the Superfund program, we must not lose sight of the acute debilitating effects on entire communities of these toxic waste sites. As we sit inside the Beltway and hear about esoteric policy issues through the filters of the Washington lobbyists, we must never forget the millions of people like those we will see today, who are experiencing first-hand the price of decades of environmental irresponsibility and the failures of the Superfund to address these mistakes.

We will also hear today from scientists and physicians about the studies that link toxic waste pollution and these health effects. For example, trichloroethylene (TCE) is the most common organic contaminant at Superfund sites, found at over half of all sites and threatening groundwater supplies throughout the country. A study released just a few weeks ago has found that even tiny amounts of TCE in drinking water—at or around the levels which we have always thought safe—have been associated with diabetes, hypertension, kidney disease, and heart disease.

We will hear of other studies finding that if you drink groundwater which has been contaminated by a Superfund site, you will have a greater chance of having a baby with birth defects affecting the nervous system and heart. You may face higher rates of death from cancer of the esophagus, stomach, colon, and rectum if you live near a toxic waste site. And there is a wide range of other illnesses that appear to be connected with Superfund sites.

With 90 percent of the drinking water of rural communities coming from groundwater, we cannot afford to ignore these studies. My own state of New Jersey, with the most toxic waste sites in the country, gets drinking water from sole source aquifers that face this type of threat.

And human health is not the only thing at stake. Superfund sites seriously threaten our nation's natural resources and the ecosystem. Pollutants escaping from these sites are contaminating fish and wildlife habitat and poisoning the food chain. Endangered species, which may have important medicinal and even anti-cancer properties, are being threatened with extinction by these sites.

And lest we dismiss these concerns as misplaced sympathy for "the birds and the bunnies," let us remember that these ecological effects can have dramatic economic impacts. The premier salmon fishery in the State of California, and other trout and sport fisheries worth over $200 million a year, are being threatened by a single Superfund site near Sacramento. The New Bedford Harbor in Massachusetts has suf-

fered hundreds of millions of dollars of damage to its lobster fishery from PCB contamination that will take years to clean up. And numerous other local economies from the Hudson River to the Gulf of Mexico to Washington State have suffered similarly from Superfund sites.

Much work remains to be done to turn around the program and more quickly, efficiently, and comprehensively clean up the toxic waste sites of our state. As one of the harshest critics of the management of Superfund over the past several years, I want to work with President Clinton to turn this program around and ensure the prompt, efficient, and complete cleanup of high priority waste sites. The health and environmental threats posed by Superfund sites make it a question of how, not whether, we clean up these sites. Let us all keep this goal in mind as we plunge into the process of reauthorizing this program today.

Senator BAUCUS. Now, I'd like to introduce the first panel of witnesses: Dr. Ben Chavis, Executive Director of the NAACP, from Cleveland; Ms. Penny Newman, with Concerned Neighbors in Action, Riverside California; Dr. Terry Hale, Head of the Aspen Citizens Association, Aspen Colorado; and Mr. Tryg Sletteland, Shasta Natural Science Association, Redding, California.

I would inform all witnesses that we have a five-minute rule and encourage you to submit your full statement for the record. I would further encourage you to summarize the best you can in five minutes. When four minutes is up, the amber light will glow. That indicates it's about time to be thinking about wrapping up. When the red light glows, that means five minutes is up, and I urge us all, including Senators, to keep within the five-minute time frame for the benefit of everyone else, so everyone has a chance to contribute.

Dr. Chavis, why don't you begin?

STATEMENT OF BENJAMIN F. CHAVIS, JR., EXECUTIVE DIRECTOR, NAACP, CLEVELAND, OHIO

Mr. CHAVIS. Thank you. Mr. Chairman and members of the committee, I am the Executive Director of the National Association for the Advancement of Colored People, the NAACP. I am pleased to have this opportunity to present testimony on the issue of Superfund and, more specifically, on the need for environmental justice and equal protection and enforcement.

During the last 10 years, it has become increasingly clear and well-documented that racial minority communities—in other words, people-of-color communities—in the United States are disproportionately exposed to a wide array of environmental hazards.

The National Association for the Advancement of Colored People is the oldest and largest organization devoted to the securing of equal rights and opportunities for America's most disenfranchised citizens. The NAACP is a non-partisan association with over 500,000 members in over 2,100 branches in all 50 States, and the District of Columbia, as well as abroad. We were founded in 1909 to confront, combat, and eradicate the causes of racial discrimination and segregation in all aspects of American life.

I'd like to say, Mr. Chairman, some would say, "Why is the NAACP at a hearing on the environment?" Well, back in 1983, I coined the term "environmental racism" when it became obvious that people-of-color communities were being systematically discriminated against concerning environmental policy development and implementation and regulatory enforcement, as well as the de-

liberate targeting of people-of-color communities for toxic-generating and/or disposal facilities.

Through my previous work with the United Church of Christ Commission for Racial Justice, we were able to publish in 1987 the first national research study on this important subject entitled "Toxic Waste and Race in the United States." This study revealed that "race proved to be the most significant among variables tested in association with the location of commercial hazardous waste facilities and that three out of every five African-Americans and Hispanic-Americans live in communities with uncontrolled toxic waste sites."

The NAACP is concerned about the process of evaluation, reauthorization, and the possible expansion of Superfund. For the record, Mr. Chairman, we have long been aware of your efforts and commitment to ensure environmental protection. We believe that this hearing is another important step in the process of clarifying critical issues that surround the efficacy and the necessity of Superfund. Superfund sites that are in minority communities throughout the Nation are in dire need of a greater response from the Federal Government, in particular from the Environmental Protection Agency.

Reference is made to a report issued last year by the National Law Journal entitled "Unequal Protection: The Racial Divide in Environmental Law." The National Law Journal report revealed that under the Superfund Cleanup Program, abandoned hazardous waste sites in minority areas take 20 percent longer to be placed on the national priority action list than those in white areas.

The report also made an analysis of EPA's record of performance at 1,177 Superfund toxic waste sites. There appears to be an institutional attitude as well as a systematic pattern of double standards of justice, double standards of enforcement, double standards of clean-up, double standards of explanation, all based on race, involving Superfund clean-up.

For example, I recently joined our local branch president of the NAACP in Columbia, Mississippi, to protest the awful and painfully slow response of cleaning up the Superfund site in Columbia, Mississippi. I saw, Mr. Chairman, with my own eyes African-American families, particularly children, living practically in the site—not just in proximity to the site, but in the site. There has been adverse impact on public health in Columbia, Mississippi, as well as other places in the Nation as a result of prolonged exposure to the multiple environmental hazards emanating from Superfund sites, and in particular the Columbia site.

The pursuit of environmental justice is a paramount priority of the NAACP since it invokes principles of social justice and equal protection.

Since I see the amber light, let me move to my conclusion, and we will submit the written testimony in full, Mr. Chairman.

Suffice it to say that to discriminate against persons in the environmental arena based on race we believe is one of the most insidious forms of racism in America today. Certainly, we know the importance of Superfund. We agree with the three principles that you articulated: to change the incentives, to make it more fair, and to have a more realistic expectation of what is possible. Mr. Chair-

man, if I could just add a fourth, that we in NAACP expect that there be some equal enforcement of the Superfund laws and regulations. We feel that it is unfair for minority communities to not receive on an equal basis clean-up response and other things that have been identified as being disproportionate.

Today, Mr. Chairman, I've been informed that Congressman John Lewis on the House side is introducing today the Environmental Justice Act, which we support, which links the public health situation with prolonged exposure, and we would hope that the Senate will also introduce this particular piece of legislation as one of the legislative remedies. It is directly pertinent to Superfund, we believe, because if in fact our Nation's hot spots and the worst places cannot get the deliberate response, the fast response from Federal Government, than it only exposes a more systematic pattern where communities that are not even on the Superfund list also then don't get hardly any attention. For us, this leads to a rise in cancer, a rise in infant mortality, a rise in respiratory diseases, and adverse health effects. Disproportionate environmental exposure leads to disproportionate health effects.

Thank you so much, and we look forward to working with you and this committee on this issue.

Senator BAUCUS. Thank you very much, Dr. Chavis. That's a very effective statement. Environmental inequity and environmental justice is, frankly, an issue that Americans must be more aware of and be more sensitive to. I don't believe that nationwide, enough Americans are focusing on the geographic injustices and the environmental inequities that do occur in our country, and I appreciate your statement very much.

I know that Senator Lautenberg, Chairman of the subcommittee, is very sensitive to the issue. He's spoken to me personally several times about it, with deep passion, I might add.

I, unfortunately, must leave now. I'm attending a press conference to announce the introduction of a bill reauthorizing the Endangered Species Act, but I will now turn the hearing over to Senator Boxer from California, who also has spoken to me with the same conviction about the problems of environmental inequities. She is a very committed person, and I'm very, very impressed with Senator Boxer since she's become a member of this committee, and California is very lucky to have her, I might add. So are we in the committee.

I will now turn the committee hearing over to Senator Boxer.

OPENING STATEMENT OF HON. BARBARA BOXER, U.S. SENATOR FROM THE STATE OF CALIFORNIA

Senator BOXER [assuming Chair]. Thank you so much, Mr. Chairman.

I have an opening statement that I will submit for the record in the interest of time.

[Senator Boxer's statement follows:]

PREPARED STATEMENT OF HON. BARBARA BOXER, U.S. SENATOR FROM THE STATE OF CALIFORNIA

Mr. Chairman, I would like to commend you for dedicating the first in a series of hearings on Superfund reauthorization to the health and environmental effects of

toxic contamination at Superfund sites. In the 7 years since Superfund was last reauthorized, we have heard a constant stream of criticism of the Superfund program. I am sure that a lot of that criticism is warranted. But what we are in danger of forgetting as we respond to the criticism is that Superfund was created to deal with a very serious problem—the health and environmental threats that toxic waste sites pose to the American people. I think it is extremely appropriate that we begin the reauthorization process with a review of the problem, and a reminder of the extreme urgency of this issue.

Last year I visited the Stringfellow acid pits in Riverside County, one of the most seriously contaminated sites in California and the nation. Mr. Chairman, what I found at Stringfellow was horrifying. Contamination levels in the soil, air and water are well beyond what can be considered safe—and that contamination has led to serious health problems including an alarmingly high cancer rate in the surrounding community.

During my visit I had a chance to meet Penny Newman, one of the witnesses who will testify here today. Ms. Newman has taken a leadership role in representing her community and I am very pleased to see her here. Mr. Chairman, I hope you and the other members of this Committee will listen especially carefully as she recounts the effects of that Superfund site on her children, her friends and her family. We must remember that the stories Penny Newman has to tell represent thousands and thousands of other Americans who face disease, death and the loss of children simply because they had the bad luck to live near a Superfund site.

As this committee knows, members of minority communities are the most likely Americans to be impacted by environmental pollution. So I am very pleased that Dr. Chavis is able to be with us today to discuss the importance of an equitable, nondiscriminatory approach to the cleanup of Superfund sites in minority communities.

Mr. Chairman, in addition to the terrible human toll of toxic contamination, these waste sites continue to pose a serious threat to our natural environment. I am pleased that among the witnesses today is Trygve [Trig] Sletteland, of the Sacramento River Information Center. Mr. Sletteland will describe for the Committee the environmental effects of the Iron Mountain mine, a toxically contaminated mine site just south of Lake Shasta in Northern California.

Three years ago there was a spill of highly toxic pesticides into the Sacramento River as the result of a train wreck just North of Lake Shasta. As a member of the House of Representatives I fought to curb the effects of that spill and strengthen the laws protecting communities against similar incidents. That one spill had devastating effects on fish stocks and riparian habitat throughout the length of the Sacramento River. But that spill was a one-time event that, over time, pales in comparison to the chronic effects on the River of the wastes from Iron Mountain. There are a number of other abandoned mines in my state that pose serious toxic risks, and we in this Committee must address this issue.

I also look forward to hearing the expert environmental assessments of the witnesses from NOAA and the Fish and Wildlife Service, as well as the view from Eastern Europe from Dr. Bowens. I would like to thank each of the witnesses hear today for taking the time to participate in this hearing.

Mr. Chairman, I applaud your decision to begin this important series of hearings on Superfund reauthorization with a review of the problems Superfund was meant to solve. Thank you for your leadership on this critical issue.

Senator BOXER. We'll continue the hearing. I was detained over on the House side giving testimony on an issue involving the Army Corps. We just go from one thing to another. But I am so pleased to have the privilege of chairing this hearing. I understand Senator Lautenberg is going to do his best to get here, but until he does, I will be here with you.

You know the rules. Please try and summarize in five minutes. We'll put your testimony into the record, and when we finish the panel, we'll open it up for questions.

Our next witness is Penny Newman.

I have visited the Stringfellow site. I am very familiar with it, and I am very pleased that you were able to be here today. Why don't you proceed.

STATEMENT OF PENNY J. NEWMAN, CONCERNED NEIGHBORS IN ACTION, RIVERSIDE, CALIFORNIA

Ms. NEWMAN. Thank you, Senator Boxer. I'm very pleased to have you representing us, too, from California.

My name is Penny Newman. I live in small rural community in Glen Avon, located in southern California. Glen Avon has the unfortunate distinction of being the home of California's top priority Superfund site, the Stringfellow acid pits. This Class I hazardous waste site was an abandoned surface impoundment facility consisting of a series of open pits, ponds, and lagoons covering 25 acres above our community in a boxed canyon in the Jurupa Mountains. The technology used was solar evaporation, and from 1956 through 1980 sprinkler systems sprayed the chemicals into the air, trying to speed up the evaporation, smothering our community in toxic chemicals.

In 1978 heavy rains caused the ponds to fill up, threatening the integrity of the dam holding back 34 million gallons of toxic waste. In order to relieve the pressure against the dam, a State agency pumped over a million gallons of toxic chemicals out of the site and into our unsuspecting community. For five days water laden with heavy metals, like chromium, cadmium, and lead; pesticides, like DDT; solvents and organics, like TCE, PCE, and PCBs, flowed over public roads, into our homes, into our yards, and inundated an elementary school just half a mile below the site.

During those five days, I was sending my two children off to school, never knowing the danger to which they were being exposed. The children of our community played in the contaminated water because no one warned us of the presence of chemicals in what we believed to be rainwater. As the foam appeared in the community, the children would make beards as they played. We began to see Levi's disintegrating, tennis shoes falling apart, and we finally learned what was happening.

That incident sparked the creation of our community group, Concerned Neighbors in Action. Concerned Neighbors in Action and Stringfellow have played a long history and a significant role in the life of Superfund. We've been used as the example of the best and the worst of the program. We've been involved as the only person to testify against Rita Lavelle during her confirmation hearing and had the pleasure, I guess, of being able to say "I told you so" when she was finally incarcerated for perjury revolving around the Stringfellow site. We were one of the first sites to have an advisory committee that brought EPA and the State together. We were the first to have a technical consultant, a program that the TAG Program under SARA was modeled on. We were the first to have a community information center, and we had to go and intervene in the Federal enforcement action in order to participate in decisions, a ruling that was challenged by the responsible parties in the U.S. Supreme Court.

But by far the most devastating impacts on our community have been the health and the future risk to our children. My family is just one example of health problems that we continue to see in the community. My two sons were born and raised in Glen Avon. My oldest son, born six weeks premature and barely weighing five

pounds, suffers from allergic-type reactions to everything and experiences severe asthma. My husband and I would take turns lying awake at night listening to him struggle to breathe, knowing that at one point we'd have to rush him to the hospital. If we took him too soon, we'd be sent back home, and if we waited too long, his life would be threatened. Eric also had a congenital hip defect that required him being in braces for about 4 years, through kindergarten. He has vision in only one eye, is classified as legally blind in the other. At the age of six, he required emergency surgery in which he had his gallbladder removed, an extremely unusual condition for a child.

My younger son suffers from severe skin problems. His skin looks like a dry river bottom. It cracks open and oozes and makes him very vulnerable to infection. He's developed severe asthma after he started school. After the 1978 floods, he began to experience double vision and dizzy spells to the point of being nauseated. I'd actually have to hold onto him to convince him he wasn't moving. He'd have severe headaches so painful that he'd scream, begging me to make them stop. He's been diagnosed as having seizures; neurological problems, like Gilles de la Tourette syndrome; quadra-paresis, a weakness in all four extremities, and on and on and on.

The chemicals have a dramatic and permanent impact on all body systems. The creation of hypersensitivity makes a discussion of risk assessment a void argument. In the last couple weeks, we have had a friend of mine for over 20 years die of a stroke at the age of 47, and we just had a kindergarten teacher at 45 die of cancer. Out of 21 staff people that I worked with in 1978 at the Glen Avon School, 17 of them have died or have very severe illnesses now.

I also work as a community organizer and have the ability to see many other Superfund sites, and I have to agree with Dr. Chavis, the worst ones are in poor, people-of-color communities. One example is Silver Valley in Idaho, in which a lead smelter has covered a 25-mile area with high levels of lead. We all know the documentation on health effects from lead, and yet the response has been helpful, handy hints, like damp mop your floors twice a day and wash children's hands when they come in from outdoors. It's clearly inadequate. In Tucson we have a TCE contamination. On one street of residents alone, 27 of those residents out of 30 homes currently have or have died of cancer. Living near Stringfellow has been a devastating experience.

The point I want to make with Superfund, if I can quickly do this, is that it is only because the Superfund Program exists that any response has happened at these sites. Through Superfund, the continued exposure to chemicals at Stringfellow has almost stopped. We no longer get flooded out in rains, we no longer have chemical dust flowing throughout the community, we no longer suffocate at night from the chemical stench from the site. Superfund liability has forced the polluters to take responsibility for their actions. Before Superfund, the corporations told us the site wasn't their problem, that we were on our own.

The real question under this whole program is, is the money being spent properly? And obviously, from the testimony of Dr.

Chavis and from what I've seen, it has not been. Can we fix it? Yes. We always hear about doing quick clean-ups, and I would like to caution on that, because one of the things that we've seen at Stringfellow is quick action—the wrong action, but at least they felt like they had to do something. In 1977 the estimated cost for total clean-up of the site was $370,000. The State in 1980, instead of doing a total removal that in 1980 dollars would have cost $12 million, chose a cost-effective means—otherwise, cheapest—of putting a clay cap on it. We are now back having to redo Stringfellow, and the estimate is $800 million. In the meantime, it is the community that has suffered.

Senator BOXER. Thank you very much.

Our next witness is Dr. Terry Hale from Aspen, Colorado.

Welcome.

STATEMENT OF TERRY L. HALE, CHAIRMAN, ASPEN CONCERNED CITIZENS, ASPEN, COLORADO

Mr. HALE. Senator Boxer, members of the committee, Aspen appreciates the opportunity to share our experience with you. We're considerably different than the site you just heard about. In 1983 the EPA put Aspen on the Superfund primarily because of high lead levels in the soil. At that time, we began what has turned out to be a 10-year very bitter battle with the EPA.

Aspen is possibly one of the most environmentally conscious communities in the Nation, perhaps one of the healthiest per capita in the Nation, and yet we found ourselves struggling against an EPA clean-up which threatened to dig four feet of dirt initially out of our community and move it to a pile some 500 yards away because of an alleged health threat from lead. Our residents had lived on this site for some 100 years in apparent excellent health. Our physicians had had no experience with lead poisoning.

Against the EPA's desire and without their help, a nurse by the name of Patti Clapper, and mother, insisted that the Colorado Health Department and ATSDR run a blood lead study against our children and our adults to see if in fact we were suffering from lead poisoning. For us, that was the only issue. If there were a health risk, we wanted it cleaned up. If there were not, we certainly didn't want the EPA digging up our town unnecessarily.

The results of the blood lead test were that our children had blood leads of 2.7, and our adults had blood leads of 3.2. The CDC has a level of concern that says that if your blood lead is in excess of 10, you have a problem. We didn't have a problem. We were astonished. And yet the EPA spent 10 years in our town and that many millions of dollars when they could have been in Cincinnati where there were children suffering from lead poisoning. The average person in Cincinnati has a blood lead of 17. The rural background count in Colorado for someone not exposed to a source is 6 or 8. Aspen had an average of 3, and we were frustrated, you can well imagine. ATSDR said they had never in their entire history tested a community whose blood leads were lower than Aspen, Colorado, and yet the clean-up proceeded.

And so it was that in 1991, on the 4th of July, our Mayor and community told the EPA we would indeed sit in front of the bull-

dozers to prevent an unnecessary clean-up which would throw dirt into the air, causing dust particles, which would in fact have created a health risk for our community.

So our problem with the EPA was different, and yet it was the same. It was based on the fact that they made a risk assessment without real biological data. They projected our health problem with a biokinetics computer uptake model, which was patently wrong. Dr. Chris Weiss of the EPA went on national TV and told that Aspen's children would 99 percent be at risk, and they were not.

I was able to organize the medical staff at our hospital, and they did a study. They contacted CDC, and they found no health risk in our community. We could not get rid of EPA until 1992, when we went back to Washington with the help of our Senators, Hank Brown and Tim Wirth. We met with Don Clay of the Superfund, and at that time EPA agreed to allow us to create what we call the TAC committee, Technical Advisory Committee. That committee was made up of six of the top physicians, soil geologists, and related scientists in the world who had expertise in the area of our alleged toxicity.

They were brought to Aspen, Colorado, and they met for a period of three days. EPA presented their program on the morning of the first day, and we presented our defense in the afternoon. At the end of that hearing and the three days, the TAC committee unanimously answered our three questions: Was there a health risk to our population? The answer was no. Was there the potential of a health risk in the future? The answer was probably not. Very, very low. There's always the possibility.

Aspen has discovered that the EPA gets in trouble with this concept of potential health risk. It opens up the universe. We recommend that EPA focus on realistic health risks, that they not worry about potentials until they've cleaned up realistics. What was being done in Aspen, and how can you answer Dr. Chavis about what the EPA was doing for 10 years and $10 million in Aspen with blood leads of 3.0 when in fact the entire community in Cincinnati has a blood lead of 17? It's an astonishing absurdity, and there are problems in the EPA that run in both directions. Both of them relate to incompetence.

We believe in the EPA in Aspen. We want it to be the best it can be. It is certainly not, and we applaud this committee's efforts to seek that they become that way.

Thank you.

Senator BOXER. Perfect timing. Thank you very much, Dr. Hale.

Tryg Sletteland, Sacramento River Information Center, Redding, California.

We welcome you.

STATEMENT OF TRYGVE B. SLETTELAND, DIRECTOR, SACRAMENTO RIVER INFORMATION CENTER, REDDING, CALIFORNIA

Mr. SLETTELAND. Thank you, Senator. It's good to see you again, especially in Washington, and especially on this side of the Hill.

My name is Tryg Sletteland. I'm a fish and wildlife conservation consultant from Redding, in far northern California. I'm here today

as Director of the Sacramento River Information Center, whose purpose is to gather, analyze, display, and disseminate data on the health of the ecosystem and the conservation and restoration activities that are going on in the Sacramento River, which have recently kicked into high gear with the passage of landmark legislation here in Washington last year. The purpose of this is to inform and stimulate action by a broad public about the condition, needs, and future of our Sacramento River ecosystem.

I'd like to introduce into the record our Center's recently published report on toxic pollution of the Sacramento River.

Senator BOXER. Without objection, the report will appear in the record. (See p. 85.)

Mr. SLETTELAND. Thank you.

Just a little background on myself. From 1979 to 1986 I was an environmental planner with the California Department of Transportation. Since then, I've directed two grassroots environmental organizations devoted to the health of the Sacramento River: the Sacramento River Preservation Trust and, more recently, the Sacramento River Council. I have a B.S. in speech from Northwestern University and a Master's in anthropology from California State University, Sacramento.

Redding is a city of about 70,000 people located on the State's largest river, the Sacramento, some 10 miles below Shasta Dam, the second largest dam in the United States. Our municipal water intake is about three miles below the release point of toxic heavy metal-laden water from the Iron Mountain Mine Superfund site. Iron Mountain Mine is located nine miles northwest of Redding, and it's the largest discharger of heavy metals to the surface waters of the United States. It puts about one-quarter of the entire national discharge of copper and zinc to surface waters from municipal and industrial sources.

The size of the problem boggles the mind. The toxicity of the output is roughly equal to the one tank car Cantara Loop herbicide spill every hour, and it's been going on for 90 years. The pH of the mine drainage, about 2, is the most acidic anywhere in the world, approaching that of battery acid.

Unfortunately, the San Diego Union Tribune story I submitted with my testimony, the photo in it is in black and white, but I think you can appreciate, even at that distance and the color of the original publication, the quality of the water that comes out of Iron Mountain Mine. It's ugly, and every time I get a photographer up there from a paper, it's the first place we go, and a picture is worth a thousand words.

The acid mine drainage has produced 33 major fish kills since 1940, wiping out millions of Sacramento River salmon during uncontrolled spill episodes in the State's top salmon nursery, suffocating them by the hundreds of thousands in a single event. Six of the fish kills have been catastrophic, defined as killing over 40 percent of the fish in the upper 20 miles of the river and by the recovery of more than 100,000 dead fish.

The value of the Sacramento River Sport and Commercial Salmon Fishery, which provides more than 70 percent of all salmon caught off California, has been estimated at up to $200 million a year. Salmon abundance is often used by biologists to measure the

health of the Sacramento River ecosystem. Recent figures confirm that these populations are in jeopardy of extinction. Indeed, the winter run, one of the four races of Sacramento River salmon, was listed as an endangered species in 1989. In 1969 316,000 salmon were counted at the then-newly constructed Red Bluff diversion dam. That number, 316,000 fish, has fallen precipitously ever since, and the last three have set consecutive record lows of 49,000, 39,000, and last year 32,000 salmon.

In recent years, the Bureau of Reclamation has provided massive releases from Shasta Dam to dilute uncontrolled spills from the mine. Last year, in the sixth year of the most recent California drought, about 100,000 acre feet, valued at $15 million, had to be spent for this purpose. What is even more worrisome is the scenario in which an uncontrolled spill from the Spring Creek debris dam coincides with peak run-off throughout the upper watershed when flood control criteria are in effect. When this occurs, as it nearly has the last 2 years, flood control takes priority, and the Federal Government signs a death warrant for many, many millions of dollars worth of salmon and drives them further down the road toward extinction.

What's being done about this problem? The sad truth is that were it not for Superfund, nothing would be in the works to adequately control this potentially explosive and ever-threatening environmental disaster. As it is, EPA's plan to collect and treat most of the acid-laced run-off at the source is now being implemented. The treatment plan scheduled to be built at the site this year will remove over 90 percent of the heavy metals from the largest sources of contamination at the mine and dispose of them safely in the inactive open pit mine at the top of the mountain.

Another important component of reducing this enormous problem, which Superfund will help to move forward on a five-year construction schedule, is enlargement of the dam on Spring Creek below the site. Increasing the capacity of the reservoir will greatly reduce the possibility of an uncontrolled spill.

Without Superfund, we would have to face other potential hazardous waste disasters as well. We would be at the mercy of abandoned mines throughout California and the West. The prospects of losing Superfund are frightening to a fishery conservationist and father of two boys who drink the water in the shadow of the world's largest source of pollution from copper, zinc, cadmium, and other heavy metals.

Senators, the organizations I represent ask you to reauthorize Superfund. In Redding and northern California, we would be lost without it.

Thank you for the opportunity to testify here today.

Senator BOXER. Thank you very much.

The Chair will announce that Dr. Chavis has an urgent need to leave, and if there isn't any objection, I'd just like to pose one question to him before he leaves, and then I'm going to ask Senator Smith to go ahead and proceed with his questions.

Dr. Chavis, Ms. Newman has described the environmental as well as economic hardships her community has suffered.Are you aware of any studies on similar economic impacts and environmental impacts in communities of color near Superfund sites?

Mr. CHAVIS. Yes. Columbia, Mississippi. I was just in Columbia, Mississippi, a few weeks ago, and that community has been severely impacted by the Superfund site there, particularly the prolonged time it takes to clean up. It's rather ironic that once a community is put on the national priority list, that in itself serves as almost a non-incentive for other economic development to move into that area or that county.

So I think once a community gets on the national priority list, it should be cleaned up, because to put a community on the national priority list and then not clean it up not only prolongs public health exposure, but it also serves as an economic disincentive, because no one is going to locate in a county or in a municipality where there's a major Superfund site, because there's a public health risk. So there is a correlation.

Our national study that we did in 1977 showed that minorities—African-Americans, Latino-Americans, and Native Americans—were disproportionately exposed to a multiplicity of these kinds of facilities and point source-generating facilities. Not just the disposal facilities, but facilities that generate the toxins in the first place. There's disproportionality almost universally when it comes to minority communities. That's why you find our communities are also economically depressed, because there is an economic disincentive where these facilities are located.

Senator BOXER. So you're saying the problem is putting the facilities there in the first place, then listing them as a Superfund site, and then not moving expeditiously to clean them up, leaving behind these health hazards and economic depression.

Mr. CHAVIS. It's a triple whammy: public health degradation, economic disincentive, and then Federal inaction. It's almost as if minority communities are triaged in this situation.

Senator BOXER. Well, we thank you very much for your testimony, and please feel free to move on to your other important engagements this morning.

Mr. CHAVIS. Thank you.

Senator BOXER. Senator Smith, I'd be glad to ask you to take your five minutes now for questions.

Senator SMITH. Thank you, Madam Chairman.

In listening to the testimony, and, Mr. Sletteland, hearing your comments about asking us to reauthorize Superfund, I think it's a given that the law should be reauthorized. I think what is not a given, though, is in what form the reauthorization ought to take place. As I listened to Dr. Hale and listened to Dr. Chavis and Ms. Newman as well, there clearly needs to be more prioritization, more adequate risk assessment on a national scale to divert the funds in the locations where the need is the greatest.

Do you believe that the law in its present form is doing the job that it's designed to do, even though it may be working for you in terms of what's happening? And that's true. I don't think anybody disputes the fact that some sites in the country are getting attention—maybe not as much as they would like, but they are getting attention. What I'm concerned about are the sites that perhaps shouldn't get the attention, as Dr. Hale pointed out, that because they are being forced upon the community for clean-up that is not

necessary or not even warranted at all, somebody else is losing help. Are you satisfied with the law the way it's written?

Mr. SLETTELAND. Well, our focus is strictly on the Sacramento River, and we only have one Superfund site on the Sacramento, Iron Mountain Mine, and that's really all that I've studied in enough depth to testify about here today. I really don't understand some of these other problems because I haven't had the opportunity to really look at them in any detail.

Senator SMITH. Dr. Hale, in your example of your situation, what was the original estimated clean-up cost that EPA indicated to you would be the cost of cleaning up the lead in your community?

Mr. HALE. In 1983, Senator, when they first came to town, they projected digging four feet of dirt from this entire site and removing it, and the cost was estimated at about $12 million. They have spent about $12 million to date, and there has been no dirt moved. We think it's way in excess of $20 million.

The real tragedy has been, as Dr. Chavis pointed out, the fact that once we were on the Superfund list, our citizens have veritably had a gun to their heads. They've been unable to get loans to refinance their homes. Fannie Mae, the Government mortgage company, for instance, doesn't trust Superfund not to sue lienholders for the cost of clean-up, so they've refused to make loans on the site. We have elderly people on our site who have been trying for 10 years to sell their home, move, and retire, and they've been virtually prisoners in their own homes because of the 10 years that's ensued without that thing.

Even now, with the TAC committee's clear assessment that there is no health risk at all, we are being sued for the cost of clean-up. And that someone could think that an owner of a house trailer on that site 100 years later has the responsibility for paying for the cost of that clean-up and, in this case, for the cost of EPA's erroneous presence in town and the incredible amount of money that they've uselessly spent I think is unconscionable.

Senator SMITH. So even though you've had experts testify that the lead level is way below the harmful realm, you're still being sued.

Mr. HALE. The cost recovery part of the Superfund law, Senator, is a separate part from the risk assessment and the remediation, and the Justice Department, because of the way the law is written, continues to press the lawsuit because that's the law. Ultimately, that's the problem with Superfund, that we don't have enough site-specific intelligence to make rational decisions, so money and time and resources which should be prioritized only for realistic health problems have been wasted incredibly around the country on sites that do not need it.

But under the wording of the law and in large part because of this incredibly vast word "potential"—potential health risk has no meaning without the word "realistic" in front of it, and Superfund is clearly authorized to clean up potential health risks.

Senator SMITH. If you can do it, and I don't mean to put you on the spot—maybe you can't—can you give me a ballpark estimate of what you feel the cost to the taxpayers, ultimately, or to your community would have been had they come in and taken the tests first

and done it the "right" way? How much do you think the cost would have been versus the $20 million that you're looking at?

Mr. HALE. Senator, if the TAC recommendations—the cost of convening the TAC committee and the cost of some landscaping of the site, which was an offer we made early on, and the cost of running random blood tests is probably less than $500,000. That's flying people from around the world who are expert to make this decision. Another interesting part of the TAC process, sir, was the idea that our community had totally lost trust in the EPA. We had none. And we signed on to the results of the TAC committee's study months before they convened, because our community trusted these scientists. We knew they were the best.

EPA cannot possibly in its employ have the best scientists relative to every toxic site. They are grossly inadequate. They have a scientific advisory committee, and they don't listen to them very often, and it's just an incapability of the organization. The concept of hiring outside experts to evaluate risk assessment is a valid one and one that I would hope would be used at other Superfund sites. The economies in time and, as you've pointed out, in money, from $22 million to $500,000, are astonishing and could perhaps solve a lot of Dr. Chavis' problems with priority.

Senator SMITH. I see my time has expired. Thank you.

I just want to mention that I have a statement I'll submit for the record.

Senator BOXER. Your statement will be included in the record.

[Senator Smith's statement follows:]

PREPARED STATEMENT OF HON. ROBERT SMITH, U.S. SENATOR FROM THE STATE OF NEW HAMPSHIRE

I'm pleased we are, at last, beginning the process of evaluating the Superfund Law to determine what's working and what's not.

I believe, however, that the subject of our first hearing is not addressing the real issue. The testimony we will hear today is designed to justify the existence of a Superfund-type Law instead of dealing with why the program has failed to accomplish its original goals. No one is questioning the need for an environmental cleanup and response program that protects our citizens' health and the environment. The real issue is how should we change the program to make it more efficient.

There have been numerous studies confirming that EPA and taxpayer dollars are *not* being directed toward environmental problems that pose the greatest risk. Superfund is a perfect example of where we should be using better risk assessment when determining the level and cost of cleanup necessary. Rather than simply assuming that all sites must be cleaned up to pristine standards, we need to choose cleanup remedies according to relative health risk. If the health of our citizens is fully protected, we don't need to force our towns and businesses into bankruptcy.

I'm sure there are certain sites that do pose a significant health threat and those should be considered a top priority for cleanup, but there are also numerous sites that do not pose a health risk. So, let's not belabor the obvious—let's get on with improving the program so that it works more efficiently for all of our citizens and communities.

Senator BOXER. Senator Graham?

Senator GRAHAM. Thank you, Senator Boxer.

I would like to take this opportunity to move into a slightly corollary area of great interest to me. I am the Chairman of the subcommittee with responsibility, among others, for the Clean Water Act, which is also scheduled for reauthorization during this Congress. So, Mr. Sletteland, I was particularly interested in your example speaking from the perspective of the Superfund Act. What

types of enforcement efforts were made under the Clean Water Act to contain the discharges that you described into the Sacramento River?

Mr. SLETTELAND. Well, that's under the jurisdiction of the State Regional Water Quality Control Board for the Central Valley region, and they've been very diligent in their investigations of the water quality impacts of Iron Mountain Mine. To my knowledge, they've taken no enforcement action under the Clean Water Act.

The Sacramento River Council sued the Federal Government, the Federal Bureau of Reclamation, last year under the Clean Water Act as well as the Endangered Species Act in order to protect salmon from warm water releases from Shasta Reservoir, because it was drawn down too low during our drought by the Federal Government to export the water to west-side San Joaquin Valley cotton growers. But we've put an end to that with a new law, and so we don't expect to have that problem again.

But as far as Iron Mountain Mine and the Clean Water Act goes, the State has just regulated and made us aware of the problems, and they do watch the emissions from the mine to make sure that they meet standards. The problem is, as I described in my testimony, when we have these flood events that occur, sometimes flood control takes priority under Federal law. Now, I don't know whether that could be tested in court, but by the time it happened, the fish would be long dead before we could ever get an injunction. So I'm not sure what we could do with the Clean Water Act. Fortunately, we don't need to use it.

Senator GRAHAM. Do you have any comments as to the relationship between State officials and their responsibilities in enforcing various State laws and the their delegated authority for Federal acts, such as the Clean Water Act, and the direct Federal role in Superfund? How well is the Federal partnership working?

Mr. SLETTELAND. I think the coordination is very good. The Central Valley Regional Water Quality Control Board and the EPA and also the California Department of Fish and Game, which has a regional presence in Redding, which is kind of a regional capital in our part of California—it's the center of an area the size of the State of Ohio, just to give you some idea—work very closely together to coordinate, to make sure that any public health impacts are addressed, any water quality impacts that would affect fisheries primarily, since the suffocation problem that the heavy metals cause—the copper and the zinc, primarily, get in the gills of the baby fish at a very sensitive life stage, and it just kills them instantly because it suffocates them.

So the coordination has been very good, and we're pleased with progress. It sounds like you could use a few other positive testimonials to the ability of Superfund to address some of our serious toxic problems. Iron Mountain Mine should turn out to be a success story. It's not over yet, but we're getting very close now to coming up with at least a temporary remedial solution to an enormous problem that the solution has eluded us for so long.

Senator GRAHAM. Dr. Hale, in your description of the situation in Aspen, you indicated that there was some time between the initial EPA arrival and when the blood tests were taken to determine the level of lead in the youth and adult population of Aspen. Could

you elaborate? What was that time delay? Was there any reticence in doing the medical evaluation? And what was the reason for that delay?

Mr. HALE. Senator, the EPA at that time, in 1983—and as far as I know, currently their policy remains the same—did not utilize—and this is astonishing to me—did not utilize nor want real biological data in order to make their risk assessments. They used a thing that was a computer uptake model, which was designed to say that if you had X amount of lead in the soil, with a formula, your blood lead levels would be X. This particular concept is an erroneous one, as was pointed out very clearly in Aspen, Colorado.

I was at a hearing at Congressman Borski's committee on Superfund a while ago, and Admiral Guymand, who was the then-acting Superfund chief, alleged that they were going to make their risk assessments even more generic and less site-specific in order to speed up the process. Frankly, I was horrified. The only way that you can tell blood lead levels and toxicity is with blood lead testing. It's a variable. Blood lead poisoning comes from paint, comes from gas fumes, it does not come from mine waste unless there's a smelter involved. All of that is commonly known to CDC and is printed very clearly in their bulletin "Preventing Lead Poisoning in Children."

Our blood test was done at citizen insistence, over the protest of the EPA, who said it was not necessary, and it was done by the Colorado Department of Health, along with ATSDR, in 1991, some 9 years after their arrival.

The thing that occurred in Aspen, I think, that is so hopeful is that we figured out that if you established the health risk reality in a scientific way that was credible, our population was willing to support that judgment. Once it was made, we were willing to get behind it. The problem was that EPA was incompetent at its risk analysis, and I believe they remain so today in many, many cases.

Senator GRAHAM. Thank you, Dr. Hale.

Senator BOXER. Thank you very, very much, Senator Graham.

Dr. Hale, I wanted to follow up. There are 1,275 Superfund sites in the country. The last thing I want to do as a Senator is waste money, and the last thing I want to do is come into a community that doesn't have a problem and tell them they have a problem. I mean, that's just stupid. So what I'm trying to find out, if you know, how many other examples like yours do you think there are?

Mr. HALE. I'm really unaware of exact numbers on that, Senator, other than to say that Aspen, on the national priority list, was number 939, and they were listed in order of toxicity. We have wondered, if they've only cleaned up 150, what the EPA was doing in Aspen for the last 10 years when they were needed here, here, and other places around the country.

Senator BOXER. So you don't have any specific number, but your gut level tells you there may be more examples of this on the lower-down sites?

Mr. HALE. We have contacted, in the course of our defense, as I call it, scientists from around the world, and we've spoken to many of the people who have worked in consultation with EPA. We've spoken to members of the Science Advisory Board, to scientists and public health physicians that have consulted with EPA. We have

never found anyone who respected the risk assessment process of EPA. For instance, they do not have a physician in their employ at a local level. This organization which purports to protect public health is a list of people who work, they're workers for EPA, but there are no physicians.

Mrs. Newman, who shared her problems and frustrations with EPA's acknowledgement and understanding of the severity of a health risk, it's very understandable that that exists, because they employ no physicians in their regional offices. There is no medical analysis.

Senator BOXER. OK. Well, let me just say for the record that that is true, except that the Agency for Toxic Substances and Disease Registry does have local offices, and they do have physicians.

Mr. HALE. The agency is a consulting arm of EPA, and in our case they did not come in and request that indeed we do those. Dr. Gina Terracino, who is a physician who worked for ATSDR, did come to our community after we insisted, not EPA, and ran blood tests, and to everyone's astonishment, she told us that she had never tested a community ever before with so low a blood test. If Dr. Terracino had proposed that blood test, I would be more impressed with EPA's facility to ATSDR's physicians. They did not.

Senator BOXER. I understand your point. Well, I'm glad she said that she never had seen a community with such a low blood test, because maybe that is in fact an unusual circumstance.

I appreciate hearing from the panel. I think we have a very interesting situation here. We have people who are saying, "We need you, we need this, we need more of this," and we have an example where a community is saying, "Thank you, but no thank you." So we will weigh all of this in our determination.

I have one question for Ms. Newman in the time I have left. You've discussed and described several illnesses that you believe have resulted from exposure to hazardous substances at Superfund sites. I went out there and I saw the tragic consequences of a completely irresponsible situation. When I saw how these chemicals flowed right down into an elementary school, it's hard to come away from there without feeling just bereft. You were explaining how the children played with the foam and put it on their face, and no one warned you, no one told you.

I know there are a lot of lawsuits, and I know there are some settlements, but the money can't undo a lot of the damage that you described. But just for the record, I would like to ask you why you do think there's a direct link between the exposure and the illnesses that you've described.

Ms. NEWMAN. Well, we've had a number of health studies that have come through, and while the State of California conducted an epidemiological study in the mid-1980's, they announced that there were really no significant health problems, and yet we got hold of internal minutes of their staff meeting which Drs. Neutra, Goldman, Satin, Swan, and Smith were at, and their summary of the health study is as follows:

Excesses were found for the incidence of all cancer and for skin cancer. Examination and blood chemistry work on children revealed myocongenital anomalies were elevated for the exposed group. Nineteen diseases were reviewed, with statistically significant elevations seen for skin rashes, earaches, and angina. All 24 symptoms

queried were more frequently reported by exposure area residents than control participants, with skin problems, earaches, and urinary problems being significantly elevated.

We had the documentation.

I'd like to add that I agree that the assessments around sites need to be very site-specific, because there is a great deal of variance, but I have to say I do a lot of traveling among some of these Superfund sites helping communities deal with the agency, and I have never seen a community where they're fighting to keep them out because they don't believe there's a problem. It is always the other side of trying to get them in. I guess I deal more with the poor communities and people of color than Aspen, Colorado, and maybe that's the problem.

I think that if we also start looking simply at risk assessment with the information that exposure to these chemicals create a hypersensitivity, which the Federal Government has acknowledged is a basis as a disabling illness—it's recognized by EPA, by Department of Housing and Urban Development, by the Social Security Administration, and the National Research Council, which basically says that if you're exposed to any amount after that hypersensitivity has developed, you can't take it. So that finding thresholds in this dose response simply doesn't play out at communities that have been exposed for a long period of time to a number of different chemicals.

So I would hope that we'd be careful in conducting health studies and waiting to see if there really are a lot of health problems around these sites before we do anything to protect the community from future exposure.

Senator BOXER. Thank you very much.

I'd like to move on to the next panel, but I would ask my colleague if he has some more questions.

Senator SMITH. Yes, just one or two follow-up.

Senator BOXER. Go right ahead.

Senator SMITH. Thank you.

Dr. Hale, just a follow-up to Senator Boxer's question to you. Are you specifically aware of other communities or have you worked with other communities that have had similar situations to yours?

Mr. HALE. During the course of our TAC committee's meeting, Aspen was contacted by about half a dozen communities from Rock Springs, Illinois; from Idaho; from Butte, Montana; a site in Utah. We had people fly to Aspen in order to observe the TAC process. Most of these were mining sites, as ourselves, where lead was encapsulated in a matrix, and they felt that, like ourselves, they did not qualify for the assumption that EPA made about high lead levels in the dirt because it did not relate to lead levels in the blood.

This was a new concept that was brought to the fore when Aspen insisted on this blood test, and we think EPA has wasted its time and energy on lots of mining sites and is about to do more of it based on the same problem.

Senator SMITH. The purpose here for my line of questioning and, I think, frankly, in terms of your own testimony is not to—no pun intended here—dump on EPA, but rather to demonstrate that there are some severe inequities and problems with the law that

need to be addressed. Not that there aren't severe crisis situations in terms of necessary clean-up, but I want to get the maximum out of the dollars.

I'm just astounded at the fact that EPA is now taking you to court. I understand the terms of the law which provide for them to do that, and if I mischaracterize this, say so, but essentially, to use a medical analogy, they misdiagnosed your case, spent $12 million to $20 million ultimately in doing so, and are suing you now to recover money that they shouldn't have spent. Isn't that correct?

Mr. HALE. That's as clearly as I can possibly understand it myself, Senator. Absolutely.

Senator SMITH. Well, then, there's something wrong with the law somewhere, and, frankly, Mr. Chairman, we ought to be looking at changes in the law to deal with that, because we don't have that kind of money to waste. The fact of the matter is that we're spending, I'm sure, hundreds of thousands of dollars, if not more, in legal fees now just in your case alone to try to collect monies that we shouldn't be collecting.

Mr. HALE. Both EPA and Aspen are currently spending enormous amounts of money on legal fees for a trial which they must prepare for because it has been calendared, and it probably will never occur. But they do nevertheless, out of fiduciary responsibility to the city and the Justice Department, and the clock is running.

I would add, Senator, with your permission, that while Aspen is a uniquely different situation, the problem is the same. We're talking about an incompetent form of prioritizing the use of EPA resources, and we're talking about an incompetent form of assessing risk assessment, of deciding which site needs to be cleaned up. Really, the numbers that are on one side of this issue, as I am, and the other is not as important as the fact that the incompetence exists in these areas, and there are inequities, as you've suggested, about the liability issue which are extraordinary and need to be readdressed.

Senator SMITH. Well, the Agency for Toxic Substances and Disease Registry, statistically backs you up on that, as you're probably aware. I'm sure your attorneys are aware. I mean, they classified 35 percent of sites as being public health hazards, 40 percent as being intermediate, and as much as 22 to 25 percent that aren't even a health hazard, apparently. So I'm not sure where they fall in terms of the 1,275 priorities as to where the focuses are, but clearly there are serious gaps in scientific knowledge about toxicity and human health effects, and I think we have to look at it.

I think the testimony of all four witnesses here clearly indicates that we need to do better risk assessment to try to eliminate the need for lawyers. Suing for monies that they shouldn't have spent is just ludicrous, and I seriously hope that the focus of these hearings, Mr. Chairman, as we proceed is not on the need for Superfund, because there is a need for Superfund, but on the need to change Superfund so that we get the biggest bang for the buck.

Mr. HALE. Aspen certainly supports that position. We have undertaken and are currently in the process of setting up a conference to be held at the Aspen Institute, hosted by Aspen and the Institute, for about 150 of all the Senate and Congressional leaders

and the top EPA people and people from industry to discuss these generic events having to do with prioritization, with liability, and risk assessment, not relating to Aspen's uniqueness, but generically to Superfund problems, in the hopes that these very simple changes—putting "realistic" in front of "potential," using real biological data—very, very simple things that can be directives without changing the law that can radically alter the effectiveness of the use of EPA resources, and you will be receiving an invitation to that shortly.

Senator SMITH. My time has expired. I would just ask that if Dr. Hale has or can get access to the assessments and the data that he has, I would request that that be provided for this committee. I think it would be important to have.

Senator LAUTENBERG [assuming Chair]. If Dr. Hale can provide it, it's perfectly all right with the subcommittee.

Mr. HALE. I certainly will.

Senator BOXER. Mr. Chairman, if I might thank you for asking me to fill in for you, it was a great honor, these witnesses were all terrific.

I can tell you the issues that the California witnesses brought forward are issues that have really grabbed Californians. The Stringfellow acid pits for example, just wreak disaster, and so many years have passed and we didn't pay enough attention to it. So I want to thank you for that.

And as far as the health of our fish and wildlife in California, that's another crucial economic area for us. The fisheries are crucial to us, and Superfund is playing such an important role.

Dr. Hale raised a very good point. Are we wasting some of our precious resources? And we might have been in that particular case. I think he makes a convincing case.

Dr. Chavis pointed out eloquently the disproportionate burden that our people of color are bearing.

So I wanted to thank you for the chance to fill your shoes as best I could.

Senator LAUTENBERG. Well, I want to thank you, Senator Boxer. I ran into a globe that happened to be sitting on the floor of my office; I tripped and hit the frame, requiring 15 stitches that were taken care of this morning, a few of them across the nose. It wasn't lack of interest that kept me from being here, as everyone knows. Coming from the State of New Jersey, which has the highest percentage of Superfund sites in all the States across the country, ninth largest in size, and we have a bequest I'm not sure we really wanted as a result of our participation in the Industrial Revolution.

But there can be significant debate and disagreement about how effective the program is, and the purpose of this hearing and others will be to determine how we can improve on the very good program. The value of the program is determined by, in my view, the ability in cases to rid the nearby neighbors, the community, of threats to their health, threats to the well-being of the community.

We have communities in my State where the effects of a pollution of the water supply were so bad that signs had to be used, distributed by the Board of Health, advising people that when they took a shower, not to raise the temperature too high and leave the

window open so that the fumes didn't overcome the person showering.

Again, I thank Senator Boxer for her willingness to jump into the breach and Senator Smith for his perceptive comments. But the fact is that Superfund can list many successes, and we've recovered over $7 billion from responsible parties. That's pretty good when the whole second phase of Superfund was renewed at $8.5 billion. So that we've started gaining on it.

Remember also that Superfund, in its first iteration at the end of 1980, was funded at about $1.6 billion, and it began to peter out at the end of the first five-year period. As a matter of a fact, we didn't renew for another year. What happens to people whose livelihood depends on having a job? These people are valued, trained employees. We can argue and gripe all we want about public employees and malingering and malaise, but I talk—forgive the immodesty—somewhat as an expert. I ran a company that employed 16,000 people that I built myself, with two others, from scratch, and I know something about employee motivation and objective goals.

I can tell you that very seldom in the whole of the corporate world, and I know lots of people and I've sat on other boards, do you get the kind of dedication and commitment that you often get in Government. People want to work here. They get less money for doing it, they get a lot more abuse for doing it, but they also want to make a contribution, and their motives are generally very good. Like any other place, we have malingers, we have those who are kind of lazy. I found that in the corporate world and, again, ran one of the most productive growth companies in the country.

So when people arrive, they see the end of an authorization, it's 1985, and they don't know whether the program's going to get renewed, who wants to hang on to a sinking ship? Who wants to be the last one to go down with it? They start looking around, and these are skills hard to replace in many cases. These are people who qualify as scientists with advanced degrees. They don't want to hang around.

So we lost a lot of momentum during that period when Superfund was not renewed promptly. People left. So it meant rehiring, training, getting people to feel pretty good about their jobs. The fact is that it took a while to build the force.

And a change in Administration when President Bush took over, the change in personnel there, all of these things are very negative influences on having EPA environmental programs move, but particularly in Superfund, because there's a lot of griping and carping by those who would like escape their liability. Lots of people would like to get out from under it. Even those who took insurance premiums for coverage and say, "Oh, but we didn't count on having to pay like that." Well, c'est la vie, as they say.

So we're going to work very hard to improve Superfund to make it an even better program, and I would urge you to watch with interest.

Dr. Hale, is home Aspen for you?

Mr. HALE. Yes, sir, it is.

Senator LAUTENBERG. Well, I know that area very well, and it always amazes me how a town like Aspen, Colorado, with a significant per capita spending in this idyllic situation, with the moun-

tains all around you, with the exception of the passage into Aspen, polluted like the devil. Air quality not very good much of the time. Air quality comparing to some of the major urban centers around. I didn't see any urgency within town to say, "Hey, let's restrict the automobile traffic. Pour it in. Let's dump it out there." They pay a lot of money to have the privilege to pollute, and it's a beautiful, beautiful area.

Mr. HALE. Our PM–10 problem, Senator, is rather somewhat similar to our smuggler lead problem. Over the last 6 years, on 3 days we exceeded the Government regulations for PM–10 allowability, and those 3 days in 6 years is what put us in the position of being a non-complying citizen, sir. We have as difficult at time with that concept, which has resulted in the threat of highway funds being pulled away and other issues, as we do with the issues on our Superfund lead site. Again, we think that there's a great deal of possibility for improvement and adding of rationality to what are well-intentioned controls.

Again, Aspen does not constitute the site of an air polluted community. You've been there, you've seen it. It is astonishing to think of it even being held so, and it only did that on three days in the last 6 years.

Senator LAUTENBERG. The three days were markedly important, according to those whom I met who live there—the guy who runs the Roaring Fork Transportation Department and others who also hold high regard for the environment, as do most people who are there. But we don't have to debate the issue of Aspen versus the world here. It's a terrific place, and we want it to represent an idyll environmentally as well as recreationally.

I thank you all very much for being here and again apologize for having stuck my nose in other global business.

[Laughter.]

Senator LAUTENBERG. I always knew that that globe and its brass frame was in a bad place, but I didn't know that I was going to meet the problem head on.

[Laughter.]

Senator LAUTENBERG. Thank you very, very much for being here with us.

Welcome, and thank you, Dr. Bowen and Dr. Johnson. We're delighted to hear from you. I'm sorry if you've been waiting for a long period. We'll try to move along. You've probably heard the rules. It's five minutes for presentation of years of hard work, but that's the way it is here.

So we'd ask you, Dr. Bowen, to go first and take your five minutes. Your full statement will be included in the record, and we would like to hear your summary at this point.

STATEMENT OF ELIZABETH BOWEN, PRESIDENT, PHYSICIANS FOR SOCIAL RESPONSIBILITY, ATLANTA, GEORGIA

Dr. BOWEN. Thank you, Senator, members of the committee. I am a family physician, and I do see patients three days a week. My name is Dr. Elizabeth Bowen. I'm on the faculty of Morehouse School of Medicine in Atlanta, Georgia, and I also serve this year as President of Physicians for Social Responsibility. It is a group

that represents 20,000 physicians throughout the United States and is part of a federation of physicians in 70 countries.

Now that the Cold War is over, we are concerned about preventing war, of course, and finding non-violent means of conflict resolution, but also of directing resources toward a comparable challenge of environment. We believe that, from our experience, many of the nations that suffered under the Cold War have catastrophic health conditions.

I just returned from a visit to Poland, my second visit, at the request of the Polish Minister of Environment and Minister of Health, with a team of physicians and experts, such as a Ph.D. toxicologist from ATSDR, and I have seen with my own eyes a world without Superfund, and it is truly catastrophic. In the southern region of Poland, in a city called Katowice, 70 percent of the children have lead poisoning due to unrestrained industrialization, most of it geared toward military production for the former Soviet Union.

Similarly, in 1989 I went with a team of physicians to Moscow, and we were in Red Square one week after Tienenman Square. As you know, an estimated 15 percent of the former Soviet Union has to be abandoned for human habitation due to horrendous environmental conditions.

We believe that this is a problem of great magnitude, and I would like to encourage you that despite the concerns and criticisms, I have seen a world without environmental regulation, and it does not work, so we cannot abandon the work we've already begun.

There are over 100 Superfund sites in the United States that the Physicians for Social Responsibility has been involved with through investigating the health studies that have been done by the Department of Energy related to the Nuclear Weapons Productions Facilities, and these studies have been published in a book called "Dead Reckoning" that looked at 124 studies.

We raise the question now because not only is it clear, as was mentioned earlier, that there are public health concerns relating to at least 35 percent of the Superfund sites that have been investigated, but also to raise some anticipatory guidance regarding the hazards ahead. If we intend to spend in the next few decades, billions of dollars to contain and clean up these areas, we must protect the workers and their families.

I know the Office of Technology Assessment recently published a study called "Hazards Ahead," and I think this is very crucial for us because although environmental epidemiology is not an exact science—I repeat, it is not an exact science—we know from many of these communities from first-hand experience, such as some that was cited this morning, there are health effects. And in the studies that have been done, for example, looking by meta-analysis—that is where you summarize a series of studies—one such study has found that workers exposed to very low doses of ionizing radiation—for example, in the DOE facilities—do have an excess of leukemia.

If you sample the limited worker studies now for these toxic areas, you do find increased rates of several forms of cancer, such as brain cancers, blood cancers, leukemias, and lymphomas. You

also look at the question of gender balance. Women who had worked at Los Alamos have excess amounts of ovarian cancers.

Furthermore, the National Research Council has reported that we need to look at non-cancer problems as well. The first principle is first, to do no harm—first, to do no harm—and I would like to suggest some recommendations that are spelled out in more detail in the written testimony.

One is that there should be an independent well-funded ATSDR with centralized and coordinated health assessments and data. We believe this is essential and that there must be independent review.

For instance, the funding for ATSDR that relates to the 100 Superfund sites at DOE and DOD places should come directly from Congress—should not be funneled in such a way that it looks like the fox is guarding the chicken house.

Also, much more health research is needed, particularly in problems that are not related to cancer—for example, lead poisoning—and as you know, about 60 percent of the Superfund sites have a significant amount of lead, and some of this lead is reaching people.

It apparently is not in Aspen, but in other communities it is turning up in children, and if there are 1:6 children and you estimate 25 or 30 children per classroom, that puts about four such children in each classroom in the country.

As you know, a hallmark of lead toxicity in children is their difficulty to pay attention, they become hyperactive, they become disruptive, and it makes it very difficult for any of the other children in the room to learn, so I think we need to look very carefully at how Superfund sites relate to health problems other than cancers.

Finally, I believe we have to have far greater physician training in environmental health. We've done surveys through Physicians for Social Responsibility, and found, for instance, in the Great Lakes region, less than half of the physicians are able to explain what mercury does to people, why mercury is a toxin, and what are the symptoms you would expect to find. Also, we found that there were very few physicians who would test people for mercury.

Now this is in the context that about 10 percent of the Superfund sites have significant amounts of mercury. An outstanding example would be Oak Ridge, where more than 2 million pounds of mercury has been lost to the community in the soil, the water, and the air, and at least 50 patients have been discovered with measurable amounts of mercury that is causing them to be ill.

So in closing, I would like to say that we must raise the questions of openness, of accountability, of the need, first to do no harm, and that we, in our professions, are responsible to protect the public, and some of that suggests protecting the future.

The children are the most active members of our society and the most vulnerable among us. My work with Physicians for Social Responsibility and at Morehouse School of Medicine is dedicated to that end, and I know that you share that concern.

I would like to close with the quote of "bide the broken with the hands of justice." Thank you.

Senator LAUTENBERG. Thank you very much, Dr. Bowen. It's too bad that we don't have more time to chat; unfortunately, we have to move along with program.

I, too, visited Poland, and was astounded by what damage to the environment has been done there, whether it's in the sea where swans I saw had black rings around their neck as they dove for nutrition, whether or not there was this mineshaft that everybody read about where they took children down 600 feet into the earth so that they could get a breath of fresh air because it was impossible otherwise, and polluted drinking water was the standard as opposed to the exception.

We thank you very much, and congratulate you for your hard work in this regard.

Dr. BOWEN. Thank you.

Senator LAUTENBERG. Dr. Johnson, nice to see you and welcome.

STATEMENT OF BARRY L. JOHNSON, ASSISTANT ADMINISTRATOR, AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, PUBLIC HEALTH SERVICE, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, ATLANTA, GEORGIA

Dr. JOHNSON. Good morning, sir. I'm Barry Johnson, Assistant Administrator of the Agency for Toxic Substances and Disease Registry, ATSDR. I've served as Assistant Administrator since 1986, and I'm a 30-year career public health officer and scientist. I welcome this opportunity to brief you on ATSDR's public health actions and findings under CERCLA and related legislation.

ATSDR is one of the eight agencies that comprise the U.S. Public Health Service. We are the principal Federal Public Health Agency involved with hazardous waste issues. As such, we will provide the committee with what we and others have found about associations between human health and hazardous waste, and the prevention of adverse human health effects that result from exposure to such wastes. I must emphasize that association does not necessarily mean causation.

As background, our agency was created by CERCLA in 1980. We draw our budget and our principal authorities from that statute.

CERCLA, as amended, mandates of ATSDR, a broad national program of Superfund site health assessments, health investigations, surveillance and registries, applied research, emergency responding, health education, and toxicological database development.

Health investigations are particularly important in a public health sense for identifying persons for whom exposures must be interdicted, and identifying those adverse health conditions that should be brought to the attention of persons found at an increased health risk and their health care providers.

What are the principal scientific data in support of these health concerns? Two kinds of human health investigations have been conducted. In one approach, Superfund sites are combined or aggregated for analysis. In the second kind of study, health investigations are conducted in individual communities around Superfund sites.

What have ATSDR and others determined about the impact on public health of hazardous waste and from emergencies due to unplanned releases of hazardous substances? First, although epidemiological findings are still unfolding, when evaluated in aggregate—

that is, by combining health data from many Superfund sites—proximity to hazardous wastes sites seems associated with a small to moderate increased risk of some kinds of birth defects, and less well-documented, some specific cancers.

I'd like to summarize those studies in brief:

Aggregated site studies. Attention has been focused on cancer rates in two studies that looked at cancer rates, one study having been done in New Jersey. The New Jersey's 21 counties were compared with national rates for specific cancers, and elevations were found in a number of specific cancers—namely, cancers of the esophagus, stomach, colon, and rectum.

A similar kind of study was done by the EPA in looking at all counties in the U.S. where hazardous waste sites were found, and comparing those with counties where similar sites were not found.

The EPA investigators found a similar excess of certain cancers—specifically, lung, bladder, esophagus, stomach, large intestine, and rectum for white males, and for cancers of the lung, breast, bladders, stomach, large intestine, and rectum for white females.

Mr. Chairman, this kind of epidemiological study of cancer rates does have limitations, but these studies together with similar studies of communities exposed to the same contaminants in drinking water, but whose source is not hazardous waste sites, provide a reasonable basis for concern that cancer rates may be increased for some specific cancers. Given the limited data available, further studies and research is clearly warranted.

Concerning birth defects studied through aggregating sites, a particularly important study examined the association between congenital malformations in children and maternal proximity to hazardous waste sites in the State of New York.

The study consists of a total of 9,313 newborns with congenital malformations, and 17,000 healthy comparison children. A total of 590 hazardous waste sites in 20 New York counties were selected for analysis.

Results indicated that maternal proximity to hazardous waste sites may carry an additional risk of approximately 12 percent of bearing children with congenital malformations. Higher malformation rates were associated with both a higher risk exposure index and documentation of off-site chemical leaks. In other words, the closer you live to the site, the greater your risk of having a malformed child.

A similar study funded by ATSDR in New Jersey found basically the same kind of pattern of birth defects, these being related to levels of trichlorethylene and carbon tetrachloride in drinking water supplies.

In a third study—again, where sites were aggregated—performed by the California Department of Health Services, a similar kind of outcome where an increased risk was found of giving births to infants with malformations of the heart and circulatory system.

In addition to these kinds of studies where sites are aggregated or combined, there are numerous studies looking at the health of persons around individual waste sites. The written testimony has a fairly long description of such studies. What has been found in some sites is evidence of birth defects, liver disease, lower birth

weight, dermatitis, respiratory irritation, neurological symptoms, and hypertension.

Many other studies have been negative, and there are various reasons for that outcome, including small sample sizes, perhaps inadequate characterization of the site to begin with, and other explanations.

Chairman, a particularly important finding relates to latent health effects. Latent health effects are important enough that site remediation, we believe, doesn't necessarily resolve all public health concerns. An increasing body of scientific information indicates past exposures to hazardous substances can cause latent adverse health effects.

Recent findings from the ATSDR Exposure Registry of approximately 5,000 persons exposed in the past to trichlorethylene in drinking water showed registrants reporting elevated rates of diabetes, stroke, elevated blood pressure, and neurological problems, when compared to national data. Follow-up research will determine to what extent these reported conditions in excess are related to TCE.

There are a number of statistics which are in the written testimony, which I'm sure will be subject of some questions. I'd like to conclude with two comments.

In addition to the health problems that pertain to residents around hazardous waste sites, Superfund also provides the means to respond to emergency chemical releases, and based on data from five State Health Departments, ATSDR concludes that these kinds of emergency events occur more often that what we had thought.

We know a great deal now about where they are occurring. Approximately 64 percent are occurring at fixed facilities—who gets hurt, amongst others, 14 percent of the time—emergency responders—people who are supposed to be prepared are getting hurt.

In closing, Mr. Chairman, Superfund has provided a challenging and difficult mandate for our small agency. We think we've made progress in clarifying a number of the health issues, and look forward to continued debate over how the health provisions of Superfund should be strengthened under reauthorizations.

Senator LAUTENBERG. Thank you very much, Dr. Johnson. You indicate that up to 80 percent of Superfund sites may pose health threats, but this also means at least 20 percent of these sites posed little or no real health hazard.

Does this suggest that the money spent by the Superfund Program at these sites—the 20 percent—is money that was wasted?

Dr. JOHNSON. That's an interesting question, sir. The 20 percent—20–25 percent of the sites for which we find no current public health problem are primarily sites that came to us from the old hazard ranking system.

That system did not take into account as well as the current hazard ranking system, off-site exposure by accumulation, et cetera, so I would be hard-pressed to say to you that there have not been sites that have been put on the list and remediated properly, for which the public health risk is not very great.

I think we should also, though, remember that there are other reasons for sites being placed on the Superfund list, and that in-

cludes not only public health concerns, but concerns for the environment.

So has it been a waste of money? I think that in most instances when you reduce the pollution that's going into the environment, we have profited from that. There are some sites, I'm sure, that we probably have put money into, that we shouldn't have.

Senator LAUTENBERG. So does that suggest we stop at the NPL definition?

Dr. JOHNSON. No, sir. I think what it does suggest is that ATSDR and EPA need to make a more concerted effort to get the health equation—the health picture—factored-in earlier into the site ranking scheme for decisions that EPA makes on which sites to commence a remediation.

I'm pleased to say that over the past year, the two agencies, EPA and ATSDR, have made significant progress toward getting our health picture into their decision-making scheme. I think that would reduce the number of sites, whether it's 20—25 percent—to hopefully, a much smaller number.

Senator LAUTENBERG. Yes. I guess, that it's also hard to decide exactly what the effects are coming from one site as opposed to other sources in the neighborhood. You stress aggregation of the exposures from all sources of chemicals near a particular site, and we don't know whether cause their own health risks only when added to other things. We know that if one smokes, for instance, that you endanger yourself considerably more if you work around asbestos or something of that nature.

There are those who wish that we could clean up every site in the country—restore it to its pristine condition—but it's just not possible. We have to look at health effects, and we have to look at resource damage as well—you can't ignore that.

We talk about social injustices here, because lots of sites are ignored where people just can't amass the volume of public opinion that is sometimes needed to change these.

So, as we look at the 20 percent that don't ostensibly pose a public health hazard, do we look at them and say, "Well, OK, maybe in the lists of things, in terms of financial capacity to deal with them, we have to delay them."

Can we make a case, in your view, for dealing with them or at least, analyzing them?

Dr. JOHNSON. Sir, I think you may—I think, in my mind, I can make a case for delaying them, but not for forgetting them. The number of sites that require remediation is sufficiently large, and the resources are not going to be there to remediate every site.

I think we need to have a better understanding of which sites are presenting the most pressing current problems for public health, deal with those sites first, and interdict exposures where they are occurring. And I think we need to look at that next level of sites where there has been consequential past exposure that may have public health significance that we need to still address.

I think there is another group of sites for which the urgency may be much less, but we need to be very thoughtful before we decide to forget or delete those sites from our list. We need to be careful that we don't walk away from something that in the future may change

its environmental characteristics, and may in fact become some kind of health threat or a threat to the environment.

Senator LAUTENBERG. Thanks. I'll go on for just a couple more minutes. I know that my colleagues will indulge me because I've been so kind to the witnesses.

The ATSDR has estimated that two-thirds of all the New Jersey Superfund sites, and a similar high percentage of sites nationwide have trichlorethylene contamination. What are the health threats posed by TCE?

Dr. JOHNSON. Trichlorethylene is, as you indicate, the single, most often found volatile organic chemical that is released from sites, and over two-thirds of all the sites have had TCE releases.

The toxicology of trichlorethylene indicates that it causes liver and kidney damage. It is clearly a substance that, at sufficiently high levels, can cause damage to the nervous system. There are animal studies that have shown that trichlorethylene will cause birth defects in the offspring of animals dosed during pregnancy.

There are human epidemiological studies that are beginning to show, we think, an association with cardiovascular disease, stroke, and perhaps, diabetes, so it's a substance that has a rather broad spectrum of toxicity.

Senator LAUTENBERG. Thank you.

Dr. JOHNSON. Sir, I should clarify also, it has not been thought—or found to be a human carcinogen, and the International Agency on Research and Cancer currently has stated that the human carcinogenicity of TCE cannot be determined from the data that are in hand.

Senator LAUTENBERG. So where is the carcinogenicity——

Dr. JOHNSON. To humans?

Senator LAUTENBERG. No. You define it as not threatening to humans. Does it threaten animal species, or are we just saying that we don't see evidence of cancer in humans?

Dr. JOHNSON. In development—in humans.

Senator LAUTENBERG. I see. OK.

Dr. Bowen, you mentioned that the epidemiological reviews don't reflect—I don't want to misquote you—a science-based—they don't have science as a base. Did I understand you——

Dr. BOWEN. No, sir. They have limitations. Epidemiology is a science of the study of populations and health trends in populations, but there are limitations to those studies—for example, what we were struggling with just now with TCE and cancers.

There's some suspicion it may be a carcinogen in some forms of animals, which then raises a suspicion that it may be in humans, although it has not been proven.

The National Research Council summarized this question in their book on environmental epidemiology in relation to public health and——

Senator LAUTENBERG. So what are the limitations?

Dr. BOWEN. The limitations are that you can look at a population and predict what may happen in that population, but when you come to my office—and I'm a family physician—I cannot predict the injury that happened this morning in the case of an individual, so it's the question of looking at an entire population versus—say, having a cancer in New Jersey, to then prove that that cancer

came from a toxic waste site or from an exposure of the occupation of that individual.

Making those connections is difficult, but it is a science, and more work needs to be done on this, and it does give us the predictive power to protect people in the future.

For instance, in terms of the clean-up question again, communities such as Oak Ridge and Hanford are "boom towns" right now. Many women and children are moving in, as well as men who are going to be both blue collar workers and engineers—and women engineers, of course, as well—and we have to ask ourselves if there are increased rates of several forms of cancer in these communities, should we then launch screening programs to be sure that the individuals who are putting themselves at risk are there, really with informed consent, before saying, first, to do no harm, and second, informed consent.

If there's a question of increased cancers in the workers, which has been shown, let us ask that question of the communities. Many of these cancers can be—if not prevented—they can be treated if they're caught early, so the individual would survive a full lifespan.

Senator LAUTENBERG. I thank both of you.

Senator Boxer?

Senator BOXER. Thank you very much, Mr. Chairman. I would like to ask a couple of questions before I leave, but before I do, I want to point something out to you in today's Washington Post.

There's a little story that might make you feel better about your experience—as you feel pain all day today, think about this guy in Portland, Oregon.

Anthony Roberts, shot through the skull with an arrow by a friend trying to knock a one-gallon fuel can off his head—survived with no brain damage.

As my mother used to say——

Senator LAUTENBERG. I guess, in order for there to be damage, there has to be something there in the first place. You can't damage nothing.

[Laughter.]

Senator BOXER. Well, all I can say is that compared to this gentleman whose friend did this I think you're going to have a better day—here, take it.

Senator LAUTENBERG. His friend's name was William—what?

[Laughter.]

Senator BOXER. As my mother would always say, "It could be worse" right?

[Laughter.]

Senator BOXER. I want to ask Mr.—it's Dr. Johnson, is that correct?

Dr. JOHNSON. Yes.

Senator BOXER. Dr. Johnson a question here, based on testimony that in the Aspen situation there wasn't specific testing the lead levels in the blood so, according to Dr. Hale, it was a wasteful exercise, and I guess, what I want to do is not so much get into that particular case of Aspen, but in general, are you doing more specific blood testing now before we move in with remedies that may not be necessary?

Dr. JOHNSON. Yes, we are, as we have enhanced our capacities intramurally within the agency. We have, in addition, an absolutely first-rate program working with, I know, some—roughly, now 30 State Health Departments that work with us very closely. We also have a close relationship with something called the Association of Occupational and Environmental Clinics.

All these three resources—our own, the State's, and the Occupational and Environmental Clinics—are collecting more biological and other samples that improve our characterization of current human exposure. We're doing more of that.

Senator BOXER. OK. And out of all the sites that are on the Superfund list, how many do you think would fall into that category where you would have questions about lower priority.

Dr. JOHNSON. We currently make that estimate from a comprehensive analysis, which is called a Public Health Assessment. We look at all the environmental data for your site, go to your State Health Department, and say—for your site, is there any kind of health data—does your State have birth defects that we can then look at in terms of any patterns around your site?

The third thing we do in these Public Health Assessments—we go into the communities and we attempt to work with local citizens, with the local Health Department, with local physicians, and try to sense if the community thinks there's some health problem at hand that we should know about.

Using these three things—environmental contamination, health outcome data, and community health concerns, we do an analysis of that, and that's called a Public Health Assessment. At the end of that analysis, we ask ourselves the question—what public health actions ought we be taking——

Senator BOXER. I'm not asking you about what you—in other words, I just want to get a sense from you how many lower priority sites are there—if you agree with Dr. Hale that his site might have been a mistake—if you do, you may not—how many sites are there like that?

Let me tell you why I'm asking. We've got 95 Superfund sites in California. One has been cleaned.

I'm a big supporter of my Chairman in this program. I want to see it move ahead.

Now if there are people who feel—and backed by scientists who feel that a site shouldn't be on there, let's go to some of these higher priority sites and get them done. I guess what I need to know from you today—just if you could be succinct in it—how many sites you think there are like the Aspen situation, where there is some community balking at this—in other words, most of the sites want you there. I just want to get a sense of how many sites might there be like that, and when are we going to finish some of the sites in California—and why is it so slow?

Is it so slow because it's so complicated? Is it so slow because we're cleaning it up to such a degree that it takes longer? Give us a sense, because we're going to be reauthorizing this, and I believe we will do a good job in that, but if you could just tell us how to make it better—which Senator Smith mentioned—and give us a sense why it takes so long, and how many sites there are that may not be as high-priority.

I'm not going to hold you to this. If you say seven, and it's two, or you say 20, and it's 18—just give us some guidance.

Dr. JOHNSON. The written testimony indicates that we think that about two percent of sites have absolutely no human health significance.

Senator BOXER. OK.

Dr. JOHNSON. Two percent.

Senator BOXER. That's very helpful.

Dr. JOHNSON. And there's another—roughly, 20 percent for which there is no current public health hazard. That doesn't necessarily mean that those sites in the past didn't have releases, it could have been consequential.

We can't do anything about that now, so that's—something between 2 and 20 percent, and I can't be any more precise than that.

Senator BOXER. Well, that's very good. That's what I was looking for.

Dr. JOHNSON. Besides it takes a long—it's and extraordinarily complex statute. I think we spend entirely too much time on litigation and trying to determine certain cost things.

It takes too long to, I think——

Senator BOXER. What do you mean, "We spend too much time on litigation"—when you say, "We?"

Dr. JOHNSON. We, who are all involved in the Superfund Program. Our agency is not involved in litigation—that's an EPA problem, but from what I hear from my colleagues at EPA, lots of time is spent in litigation.

Senator BOXER. So if you're going to suggest things to us, it's how to reform this program so that it's not held up by all this litigation. Is that what you're saying?

Dr. JOHNSON. I think one of the things the committee should take a good look at is to what extent, what's called "The Superfund Accelerated Clean-up Model," will suffice for those purposes.

Our looking at the Accelerated Clean-up Model is encouraging to us. We think there are many things that EPA is proposing and has begun doing in parallel, as opposed to doing it step-by-step-by-step.

Doing things in parallel should cut down on time, and I think this Committee ought to look at that model and if it needs to be endorsed, do so.

Senator BOXER. Thank you, Dr. Johnson.

Thank you, Mr. Chairman. That was very helpful.

Dr. JOHNSON. Thank you very much.

Senator LAUTENBERG. Thank you, Senator Boxer.

Senator Smith?

Senator SMITH. Dr. Johnson, I understand what you meant in response to the question from Senator Lautenberg regarding the issue of whether or not we're wasting money when we spend money cleaning up sites that are lower on the priority list, but I'm somewhat troubled by what you said because you went on and discussed the fact that we ought to keep exploring the possibility of putting sites on the list, if in fact there are such sites that may be out there.

I'm troubled by that because I don't think the issue is waste. I'm not in any way trying to use an analogy which would in any way compare toxic waste to weeds, but as a kid, I can remember grow-

ing up on a farm, and there was a weed called an "umbrella weed," and if you allowed it to grow, it would shade out whatever plants you were planting—potatoes, for example.

My grandfather always told me to pull those weeds out first, so you'd go down the row and you'd pull out the umbrella weeds, and there would be a lot of little weeds there that later would be a threat to the plant.

For the life of me, I don't understand how we're ever going to resolve some of the major issues and major problems that threaten us on the NPL list if we don't move away from that attitude—I mean, why worry about putting another 40 sites on the list, before we've cleaned up some of the 95 that Senator Boxer says aren't being cleaned up in her State that may be high on the priority list. It doesn't make any sense to me.

If we're not prepared to bite the bullet here and change this law—I mean, if we're going to be throwing in the bag—"Anybody who wants to change the Superfund Law is simply somebody that doesn't want to clean up toxic"—then we're not going to resolve it, and we're going to continue to see people get cancer, or get more lead, or whatever the problem may be somewhere out in the community.

We've got to deal with that. I think you should be more forthright with your answer. I think the answer ought to be—I don't want to put words in your mouth, but I wish you had said, "The priority is all wrong. We ought to be prioritizing it out. We ought to go to the number one site and clean it up. Then we ought to go to the number two site and clean it up," we can't ignore other sites where there are problems, but I just don't understand how you can justify spending money—and as I say, it's not waste.

You can pull the little weeds out, you can pull the big weed out—it's not a waste to pull the little weed out, but it's certainly not the right priority—it's not the right order—is it?

Dr. JOHNSON. I'm not sure, sir, what was attributed to me, but I strongly think that we need to do a better job in prioritizing the sites.

I think that the health information that we accumulate ought to be used as a more significant factor in establishing those priorities, and there's great support within EPA for that to happen.

Whether we need to place more sites on the NPL is not a decision my agency is involved with——

Senator SMITH. All right. I understand.

Dr. JOHNSON. But I think that we ought to be, as a society—and I, too, am a taxpayer—we ought to have our priorities right, and for the sites that represent less of a significant threat to health—and I said less, not zero—they ought to look at those in terms of perhaps the best interest and best urgency.

Senator SMITH. I feel so strongly about it that, to me—using the case that Dr. Hale gave as an example—if we're having to spend money to hire attorneys to sue to recover monies that should never have been spent, then something's wrong with the law, and it ought to be changed before we reauthorize it—I mean, that's the way I see it.

I made my point, and I want to move on to one other area. Some of the studies that have been done on environmental risks, fasci-

natingly enough, put Superfund sites low on the list of risks, below other environmental problems out there.

Would you like to comment on that, in terms of——

Dr. JOHNSON. Oh, yes.

Senator SMITH. Go ahead.

Dr. JOHNSON. There's only one study of which I'm aware, and that's a study that was done by the EPA, and it's called "The Unfinished Business Study."

It was a study that attempted to look at and to rank the major groups of environmental hazards, one of which was hazardous waste sites. I think the EPA is to be commended for attempting that kind of relative risk or comparative risk analysis.

But I have major reservations in terms of the outcome of that study, and the fact that the health part of that was not incorporated into the analysis, into the debates and discussions. I'm troubled by that.

In addition, the rankings are largely based on cancer risk, and we know—for example, for hazardous waste sites, I'm being persuaded by what's been published and what my own agency has done, that birth defects represent a greater risk to persons around hazardous waste sites than cancer, so if you have a relative risk process based primarily on cancer and don't include birth defects and don't include neurological problems, then what is the worth of the final ranking? I have some concerns about how accurate that turned out.

Senator SMITH. I see my time is up. Just one final point—here's what I hear from communities in New Hampshire—and as far as PRPs are concerned, you hear "Let's deal with the orphan shares. Tell me how much I owe. Let's get this thing resolved, let's not keep it going on forever"—I hear that from communities as well as businesses.

Let's take an example. A community with a safe drinking water problem—this is a pretty bad community here—one with a safe drinking water problem, one with a landfill problem, one with a Superfund site, and perhaps one with sewage leaking into the local river, and maybe in non-compliance with the Clean Air Act.

They have five or six problems, and somebody is shooting at them from the Federal Government in one way or another. Why can't they make the decision to prioritize that? Wouldn't it be better for Superfund and all of these agencies that deal with all of these areas of environmental concern—why wouldn't it be better for them to say to those communities, "Look, here's your risk assessment, here's the problem. Now, we'll show you what the priorities are, and how you clean them up"—but that's not what's happening.

EPA says, "You have to comply with Clean Air. You have to put new water pipes in. You have to change your sewer pipes"—and it may be $100 million—$200 million for all this—"You have to fill in your landfill"—or whatever—and regardless, it's a problem, therefore, it has to be cleaned up.

Nobody's putting any priority on this in the community itself with the help of the EPA, and it just seems to me that that is a problem that ought to be addressed by the community, and I think

they're the best—as Dr. Hale mentioned, they are the best ones to address it in some cases.

Either one of you can respond, go ahead, Dr. Bowen, if you'd like.

Dr. BOWEN. Yes. I would be willing to respond to that. Again, as a family physician, my first question would be what are the major sources and the major problems in that community?

For example, Lancaster, Pennsylvania had a non-profit hospital that made a profit and needed to spend it in the community, and I suggested lead screening. They said, "That's not a problem here." I said, "How do you know?" They said, "Well, we haven't heard about it." I said, "Why don't you check 25 kids," and they found that 1:4 had lead poisoning. Now, they've checked 1,000 kids, and 1:4 has lead poisoning.

Now some of it is from toxic waste sites, some is from lead paint, and some is from water, so when that child comes into my clinic, I have to see where on the map the child lives.

The hospital where I practice in Atlanta has 330 million pounds of toxic waste generated into the environment yearly from industry in the immediate area, and it seems highly unlikely that my patients will come in without any contamination from those sources because the environment, from a medical standpoint, is what you breathe, what you eat, and what you drink, and you can only live four minutes without oxygen, four days without water, and four weeks without food.

So to answer your question, I think we need collaboration in the communities, between the medical community, and the educators, saying, "Why do we have this epidemic of learning disabilities?"—some estimates are that more than half of the learning disabilities are related to various forms of contamination—lead, being the most soundly proven. Lead is probably the tip of the iceberg.

Sixty percent of the Superfund sites have lead, 25 percent have cadmium, copper, and arsenic. Those compounds will also effect the brain—often, people believe, first. I, personally, have treated about 200 patients with those kinds of poisonings, and the first problems do show up in the brain—often, in the brains of children. They are like the canaries in the mine.

I agree with you completely, Senator Smith, we must consult closely with the communities, but they also need outside help. They need the guidance and the direction so that they know there are solutions.

For instance, in Poland—I was there a week and was training 20 Pediatricians—half the factories have been closed, the other half are in the process of getting scrubbers to clean the smoke stacks. They still have lead in their gas. They are in the process of re-routing the highways. The children on the playgrounds have four feet of lead in the dust, and the worst cases are in the boys who play soccer, so they're thinking of putting in perhaps sod on those playgrounds to protect those boys.

But it is a multiple source of exposure, and any single approach is going to be inadequate, but I think we do need both, and I don't think the communities can do it by themselves.

Senator SMITH. I would agree.

Mr. Chairman, you've been very patient. Let me just, please, make one final comment.

Under the law, the way it's written now—the Superfund Law—in the community example that I gave, if they found a polluted aquifer with a very dangerous pollutant of some kind and it was not moving, they could still be required to clean it up, even though they may have other problems and other priorities.

And they don't have the option to make that decision—they may want to put new water pipes in or new sewage pipes—so that's why I think something has to be done to change the law to allow for greater citizen input to help make those decisions rather than one agency coming in and saying, "This is it. This is what you have to do."

Dr. BOWEN. Yes. I agree completely.

Senator SMITH. Thank you.

Senator LAUTENBERG. If my colleague would indulge me for a moment—I don't know whether the answer was clear enough to the specific question, so I'll ask you, if you don't mind, to restate the question.

Did you want to merge the groups of hazards and say, see which one is the most dangerous to this community—whether it's air, toxics, water—and not have air going against clean-up, not having Superfund do its clean-up, not having Clean Water doing its clean-up—is that——

Senator SMITH. Well, I'm not sure if such a merger would take place, but my point is that a community does not have that option.

If a site is identified with, say, a polluted aquifer that is not moving—it is not an immediate threat in the sense that if it were a moving aquifer that's moving into wells it would pose an immediate threat. Still, they could be required to clean it up or be under the threat of fine even though they may have a plant that could.

I don't know how one would make that kind of a decision. That's something I haven't focused on, but I think the communities ought to have that flexibility. They don't now, based on the way all of these environmental laws are written.

Senator LAUTENBERG. Senator Smith is a pretty clever man. He knows what's going on, so please forgive this relatively pedantic response—and that is, when you look at air, there are so many contributors to air pollution that the law has to be relatively large in its scope.

If you look at water, the same thing is true—it might be households, it might be industry, it might be even a natural condition or natural phenomenon—storm water run-off, combined sewage, the overflows—when you get to toxic waste sites.

Much of what I would like to see is to try to tag the responsible parties with that obligation. I wouldn't want to see one of my communities—I'm sure you wouldn't either—that has a very difficult water problem unrelated to, let's say, a toxic waste site, but has some risks and health hazards posed by the toxic waste sites.

I wouldn't want to have to decide which of these threats we deal with—if they both threaten either unborn children, or if they threaten the elderly because of respiratory conditions. I think the reason for each of these laws kind of standing on their own is to deal with specific problems, each of which might have a different health consequence.

It's a complicated thing, and I think the question's a fair one to raise. In the review, I hope that we'll be able to explore all of these issues.

I get after people who smoke by banning smoking in airplanes. I'm the author of that law, and what's happened now is people began to see how pleasant it is to fly smoke-free.

That—forgive the immodesty—I think, began the role against smoking in our society, because it was really all of a sudden very obvious that without cigarette smoke pouring all over you, life could be significantly more pleasant.

I don't remember griping about the person in line ahead of me waiting to buy a ticket, smoking. Today, I feel like tapping him on his shoulder—or shooting the arrow through the head, as this other guy did——

[Laughter.]

Senator LAUTENBERG. But there's an awareness factor, and I know that you're a nature lover—one could not live in New Hampshire, and not be—as you see the return of fish species, and good water quality returning in our rivers—I mean, even the Hudson River, subject to so much pollution, is beginning to see some salmon, and there's some more bass developing—yes, some of them carry chemicals, but it's happening, and when you begin to see that kind of progress, you realize the value of these.

Unfortunately, we have limited resources that we have to deal with them, so I think the question is a good one.

If you have nothing else, thank you very much, both of you, Dr. Bowen and Dr. Johnson.

Dr. BOWEN. Thank you.

Senator LAUTENBERG. Normally, they say, "The final panel" is Mr. Kennedy and Mr. Blanchard, and perhaps each of these—correction, it says, "Finally, the last panel."

[Laughter.]

Senator LAUTENBERG. We welcome you. I'm sorry that it took so long to move the program. The problem is that everything is of great interest, especially, to the Chairman.

Mr. Kennedy, you know the 5-minute rule that we ignore?

[Laughter.]

Senator LAUTENBERG. We'll ask you to pay attention, and invite you to give your testimony in summary fashion. You're from NOAA, and you're based in Seattle, is that right?

Mr. KENNEDY. I am.

Senator LAUTENBERG. OK, sir. Thank you, and welcome.

STATEMENT OF DAVID M. KENNEDY, DIRECTOR, HAZARDOUS MATERIALS RESPONSE AND ASSESSMENT DIVISION, NATIONAL OCEAN SERVICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, SEATTLE, WASHINGTON, ACCOMPANIED BY DR. ALYCE FRITZ, BRANCH CHIEF, NATIONAL OCEAN SERVICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINSTRATION

Mr. KENNEDY. Good afternoon. My name is David Kennedy, and I am the Director of NOAA's Hazardous Materials Response and Assessment Division. With me today is Dr. Alyce Fritz. Dr. Fritz runs our Coastal Resource Coordination Program, which works

closely with EPA to protect the natural resources at Superfund sites.

Before I begin, I would like to make it clear that I am not here to represent the administration's position on CERCLA reauthorization. I'm here to share some of my experiences with the Superfund Program, and to give you my assessment of the potential environmental and ecological risk that hazardous waste sites can pose.

I do not have any aggregate figures for the risk that Superfund sites pose to our natural resources nationwide, but I believe that the risk is substantial. Hazardous waste sites injure fish, shell fish, marine mammals, and other organisms.

More importantly, waste sites degrade, and destroy valuable wetlands and coastal habitat.

As I will explain in my testimony, CERCLA provides NOAA with a powerful mechanism for restoring injured resources. Without CERCLA, most of these waste sites would languish, continuing to pollute the environment, and destroy fish and other resources.

Later in my testimony, I will give you some specific examples—it looks like it's probably going to be one example, the way we're going here—where we've used CERCLA authorities to protect and restore injured resources.

Superfund sites have the potential to impact NOAA trust resources in a number of ways:

First, many hazardous materials have direct toxic effects on aquatic organisms.

Second, hazardous materials bioaccumulate and biomagnify, getting into the food chain, and degrading the entire populations.

Third, hazardous materials degrade and destroy valuable habitat.

Fourth, hazardous materials are persistent.

And finally, contaminants migrate by many pathways into the environment and the food chain.

As I said in my opening statement, NOAA has found CERCLA to be a powerful mechanism for restoring injured resources. Several aspects of the law are important to us:

CERCLA allows the Federal Government to clean up sites that have no viable responsible party. Without Superfund, many of these abandoned sites would probably be ignored.

CERCLA is the only Federal law that makes polluters responsible not only for their pollution, but for the injury, both to human health and to the environment, that their pollution causes. It is also the only law that forces responsible parties not only to clean up their mess, but to restore what they have injured.

CERCLA provides a carefully structured process designed to evaluate risk, develop practical solutions, and substantially reduce risk through remedial actions.

CERCLA has taught us a valuable lesson—it is neither wise, nor cost-effective to be irresponsible in handling and disposing hazardous wastes. The resources at risk are simply too valuable, and the costs of cleaning up are too great.

The impact of Superfund sites on NOAA trust resources is not insignificant. For instance, of the 335 sites that NOAA is currently evaluating, approximately 95 percent impact streams and estuaries.

One particular waste site can pose a significant threat to the health of a coastal ecosystem. More significant, is the cumulative effect of the hundreds of coastal hazardous waste sites throughout our nation.

If I may, I'd like to take a couple of minutes now and go over some of these sites. I may actually be able to do two.

The Hudson River is one. Essentially, the majority of the huge watershed is a Superfund site—320 kilometers of rivers contaminated by large concentrations of PCBs discharged by General Electric.

Billion dollar commercial and recreational fisheries have been closed because of PCB contamination, including the striped bass and blue crab, and the recovery of the endangered shortnose sturgeon, compromised because of the reproductive impairment.

PCBs bioaccumulate and biomagnify in the food chain. Large areas of contaminated sediment serve as potentially continuous sources that contaminate fish, thus perpetuating the closures, losses, and risks to humans and organisms for years to come. Unless sources are remediated, there is little hope for recovery of fisheries—in the end, to long-term impact.

In addition, the potential for widespread migration out of the system into the sound and ocean through sediments and through the food chain persists. Small concentrations as low as one PPM in sediments, represent a significant ecological risk, and ultimately threatens birds, marine mammals, and humans.

Marine mammals on the Eastern seaboard are accumulating toxic organic chlorines such as PCBs, which may be increasing their vulnerability to disease and contributing to some of the recent die-offs.

The State has monitored contaminant levels in fish for a number of years for closure purposes, but the Superfund listing has mobilized Federal officials to work with the State to acquire the information needed to determine the full extent of contamination, increase awareness of risks to humans and environment, and develop feasible options for remediation. The State demonstrates that ecological risk assessment is crucial to understanding the nature of the problem, the need for remedy, and the potential impacts for remediation.

The Superfund process here is an example of coordinated agency effort and consensus-building to incorporate concerns of the trustees, and to draw on technical expertise in order to better focus efforts of contractors, increase cost-effectiveness of investigations, and ultimately, to develop options to enhance recovery of severely impacted resources.

I guess I really don't have time to go to the last one, so in closing, I'd like to say that the good news is that most of the risk to natural resources can be removed with appropriate measures, and although addressing natural resource concerns always costs more than ignoring them, it does not have to cost a lot more than addressing human health concerns alone.

The way to keep natural resource injury restoration costs down is to build natural resource protection into the process from the very start. With natural resource protection as part of the goal from the beginning and with each step in the process considering

the environment, the end result will be a remedy that protects both humans and the natural environment.

This approach is efficient because it takes advantage of existing opportunities. For example, if sampling to assess environmental effects is included in the initial sampling plans, a separate survey to examine natural resources will not be necessary. And if the remedy includes designing a cap that will destroy less wetlands or replant marsh grass damaged during the remedy, there will be no need for a second mitigative action.

Through our Coastal Resource Coordination Program, we have worked hard over the past 8 years to address the natural resource concerns in the most efficient way possible as part of the Superfund process. That concludes my testimony.

Senator LAUTENBERG. Thank you very much.

Mr. Blanchard, we'll hear from you now, please.

STATEMENT OF BRUCE BLANCHARD, DEPUTY DIRECTOR, U.S. FISH AND WILDLIFE SERVICE

Mr. BLANCHARD. Mr. Chairman, I'm Bruce Blanchard, the Deputy Director of the Fish and Wildlife Service, and I appreciate the opportunity to testify on behalf of the Service on this subject.

In that regard, I would go a step farther and say that we really appreciate the opportunity to come before you as our authorizing Committee. It reflects your understanding of our role in this process to do that.

I am not going to read from my statement; you have it in the record. There are several items that I want to cover:

First, we consider ourselves the premiere conservation organization of the government, and in many ways we're recognized worldwide in the business that we're in.

We're the biological arm of natural resources management, and we have 3,000-plus biologists in the Fish and Wildlife Service. Many people don't realize we are fundamentally a scientific organization, and it is built around the natural environment and the critters that are in it.

Historically, in working with EPA on the Superfund process, we had some initial disappointments, and in a large part, it was because they were very much driven by a technological, physical science, and a regulatory approach toward cleaning up hazardous waste sites. Gradually, we've been able to have the inroads to bring—to bear biological expertise.

There are many horror stories that have been experienced in the past. There are examples of them—we can provide examples of contaminants and hazardous waste sites; if they're related to sites, or related to generic contaminant problems.

We heard earlier testimony that talked about particular chemicals. Some of them effect humans, some of them effect critters much more so than humans—the TCE mentioned. You can't cause carcinogens with humans, but I can assure you, some are disastrous when it comes to certain critters.

In this process, working with EPA, the area that we have found, and where we can make real progress in some regions is where we can bring that biological expertise to bear very early in the process.

They have revised their hazard ranking system so that now, often the priority system does a better job of identifying those, compared to historical approaches, but even then, when putting a matter on the national priorities list—some 1,200 and some odd sites at this point—historically, they have a lock-step process in going through that and hiring a consultant—somebody to do all these analyses and produce their remedial investigations.

We have found that if we can sit down with them very early on a site, and even help them design the plan of study that the contractor will even bid for, we can point out to their technical people what ecological factors to look for in the first place.

NOAA has the same experience. We have it more in inland areas than they but we both are very much involved with this, in influencing those initial studies in which we were regularly involved rather late.

We would come in and say, "Why didn't you look at this?" They hadn't even thought about things that would get in the food chains or food webs because they were driven by some human health criteria which was much more physical science-oriented—even then, maybe biological when it came to humans, but when it came to critters, they were far off the mark.

We have some EPA regions who have really come forward here and are working closely with us, and we are substantially influencing how they go about their business, but it's step-by-step, region-by-region to actually convince the people to do it.

It is on the right path. We are working with EPA to do more of it, but we feel they're beginning now to look at the beginning, for what ought to be looked at, rather than go through a cookie-cutter process on every single site.

We and NOAA participate now on a number of what we call "Biological, Technical Assistance Groups" in these regions, and it's beginning to pay for itself. We're saving them money because they're going and looking at the right things in the first place, and not later, after they've spent all their money on the study.

The second broad area was also mentioned by NOAA, and it deals with natural resource damages and our recovery of them. It's really a three-step process:

We have to first conduct an assessment. The second thing we have to do is recover the money—the damages—from a third party. And last, then put that money to work to restore the natural resources that were damaged.

The more we can get EPA to clean the site up, the less natural resource damages are residual to the site, and therefore, the less happens.

It's like the old story about "If I don't get you first, I'll get you later." And the natural resource damage situation falls in that category to the extent that they clean the site up.

In the clean-up part of it, we want less residual damages remaining to seek recovery from. That's not to say there aren't some in between, but it helps us if we get the clean-up done on ecological factors in the first place because it just reduces the down-stream work.

With that, I'll close and say that I enjoyed being here and enjoyed talking to you, and we would we glad to work with your staff or provide additional information as needed.

Senator LAUTENBERG. Thank you. We need someone to represent the critters. We want them all there—part of a structure that, at least, I fear would be severely damaged if we have enough parts of it that disappear from the face of the earth.

Mr. Kennedy, are there serious threats to human health from hazardous substances that you see released from Superfund into the food chain? Does that pose a significant risk as you see it?

Mr. KENNEDY. Well, I certainly think that it's something you have to look at pretty carefully. I don't know that I have any statistics—do you, Alyce, on how often that's measured?

Dr. FRITZ. No. But we have examples of sites where that's the case, and even in sites that have caused fishery closure or advisory, there's still a concern that, for instance, blue crabs or blue fish are still being fished and consumed in a representative case.

Senator LAUTENBERG. I think the point both of you make is that while this isn't necessarily directly adverse or immediately recognizable as dangerous to human health, the fact is that it starts a process that eventually catches up.

Mr. Blanchard, do you find particular types of natural resources suffering more than others as a result of exposure to hazardous substances—are endangered species more at risk than others? Is there a generalization that can be made?

Mr. BLANCHARD. Well, if there's a generalization, it's that our aquatic species are probably more influenced—more easily influenced than others—and I don't mean just fisheries, but they can also include mammals, and can include birds as well, and that's in large part, because that's what increases the mobility of the toxicity.

As a broad generality, endangered species cover all the different kinds of species as well, so whether it's endangered or not, is not really the issue. There are some, in some places, endangered species affected by hazardous waste sites, but in a broader context, whether some species are more affected than others, I would say—you know, as a broad generality, those that are involved with water are generally more affected just because of the transport mechanism.

Senator LAUTENBERG. Yes. Are there any recommendations you would like to make on how best to mitigate these adverse effects on fish and wildlife resources that are caused by—let's say, the sublethal, long-term, chronic exposure to hazardous substances?

Mr. BLANCHARD. Well, I said before that there are two steps: one is the hazard ranking system, and we have to play that one out a little farther to see how it's working. The EPA has now been working over the last few years with a newer ranking system. We feel that it does consider ecological factors, more so than the past.

The second area has to do, though, with the actual studies they make that deal with ecological factors, as opposed to human health factors that have historically driven them—or even technological factors from a physical science standpoint, and that is basically—we think they need more biology early on in the process, and the

more that they can involve us and NOAA in that process at the beginning, the better a job will be done.

Senator LAUTENBERG. So under the umbrella of Superfund, more can be done than we've seen thus far in terms of protecting species other than the human species.

Mr. BLANCHARD. Yes, sir. That's a fair characterization.

Senator LAUTENBERG. Do you have anything that you can leave with us that would portray the kind of adverse impacts on fish and wildlife resources that you've described?

Mr. BLANCHARD. Yes, sir. I have examples, I'd be pleased to leave with the committee.

Senator LAUTENBERG. Or submit them to the committee. I appreciate the opportunity to hear you and exchange with you today.

I was in Sweden some time ago, examining Radon. It's scary when you look at the statistics, and yet it's very hard to get the public engaged because of the invisible nature of things—it's non-aromatic—and yet, we know that there is linkage between that and lung cancer of very significant proportion.

While there, I was shown by the Swedish Government, the dramatic turnaround with the river that flows through Stockholm and how fish are back, and it's almost potable water—certainly swimmable.

Are there any examples that either of you have that reflect progress as a result of steps taken that we can use to show examples?

I notice, Mr. Kennedy used the Hudson River, and I ventured out a little bit in that—it's near me. We see catches of shad in the Delaware River that are growing larger and larger. It's very interesting.

It's about this time of year—a good shad roe down there. The same family's been fishing for three generations, and they have observed that there's a much greater harvest.

In the Hudson River, I'm a nature freak, so I watch to see what kind of things are happening with striped bass, and they have seen salmon coming up, but again, they're carrying a load of chemicals very often.

Are there any examples that we can point to, where we say, "Hey, we took this step, and look at the result?" I've been up to Alaska at the Exxon Valdez—I'm also Chairman of the Transportation Subcommittee—my other hat, for the Appropriations Committee, so I rushed up there to see what was happening and see what we could learn, and we learned that we're spilling oil at an ever-faster rate, but the damage—though there's a contest between scientists on both sides, the fact is that there are a lot less otters up there, and a significantly less number of eagles.

The salmon fisheries have been productive, but that's not to say that they wouldn't have been even more productive, and of course, we still don't have enough time to assess the long-term impact.

Are there any examples that either of you can give us where—once we did something about limiting the toxicities—the exposure—that nature fought back?

Dr. FRITZ. Well, the Superfund Program, although it's been in effect since 1980—it's actually relatively new, so there are few examples. Although we're advancing toward selecting more environ-

mentally protective remedies, it's still at the infancy of remedy implementation. But at one site in Region 10 in Seattle—Commencement Bay—it's a very complex site—they're attacking at different stages, and it's one of the waterways that they have been able to do some work and implement some mitigation.

They really are seeing some recovery within the communities that are very important to the salmon fisheries using that area, and I think the kinds of control measures and clean-up measures that can be taken for example Delaware—because they've done a better job of controlling sewage and municipal releases, we're seeing a better recovery in terms of removing sources of metals or PCBs. Through other programs, we see that possibility of recovery, so I'm very optimistic that this will happen with the Superfund program.

Mr. KENNEDY. Yes. That's why I make the statement that it looks like we do have the potential for things to recover. We've identified how to go about taking care of a lot of these long-term releases that are causing the continual damage.

Once those are contained, cleaned up, and removed, we don't see any reason why there won't be more success stories to come.

Senator LAUTENBERG. What do we do, Mr. Kennedy, with the problems like we have in the Hudson River—PCBs, picking them up, dumping them out at larger depths in the ocean—do we lose as we gain? Do we get enough out of a place like the Hudson—the great and gorgeous river that it is—by diffusing the deposits in the ocean?

Mr. KENNEDY. Well, I don't think there is any one simple answer—there's no question about that. What we've been working on—proposing—is that there has to be a comprehensive, across-the-board—all the agencies that are going to be affected, involved—decision, where we weigh the pluses and the minuses, and it's probably not going to be a total win-win situation.

You're going to have to cut your losses, and look at the best net environmental benefit that you're going to get from the whole process. There are certainly discussions on if disposal does take place off shore, there will have to be some very, very stringent precautions and steps taken to control whatever you do dump—if that's feasible—as well as identifying hotspots, trying to cap in places that——

Senator LAUTENBERG. Some capping, yes. Very interesting.

Mr. BLANCHARD. I was going to add one item to what he said, and NOAA earlier mentioned a comment about the appropriateness of looking at things as a group or within a common area. The ranking system of EPA doesn't really provide for that—in essence, it goes at it from a legal standpoint, site-by-site-by-site.

There are other times when, in fact, we have six sites in a common area, but three of them are low-priority and one's a high priority, and the other's are middle-sized, and somehow you have to say, in the aggregate, is that important?

Well, EPA's system doesn't allow that. It will take them, and look at them separately as priorities. There are certain advantages in lumping these and grouping them—at least, geographically—and looking at them as a whole, because the fish and the birds and the

animals don't give a damn which site it is—it could be six sites up the same river causing the problem.

And that's one reason why we will not see some readily apparent examples like the Hudson River, which—the clean-up in the Hudson doesn't have a thing to do with the Superfund.

Probably, one of the better examples is right out here in our front yard, the Potomac River. It's come one tremendous way in the last 20 years, and it doesn't have anything to do with Superfund.

Senator LAUTENBERG. Yes.

Mr. BLANCHARD. We're seeing fish, definitely back.

Senator LAUTENBERG. Edible?

Mr. BLANCHARD. Yes, sir.

Senator LAUTENBERG. Yes. It's amazing how those little things will find a way to survive. I live right near what looks like an awful dirty stream, and someone called my apartment and said, "You know, Senator, look at what they're dumping out here"—this is right near the Hackensack River, which is kind of a nice river, too—"And all that stuff out there—there's been a discharge someplace"—so I called the local Board of Health and asked them if they could find out for me.

They found out it was goose droppings—and lots of it.

[Laughter.]

Senator LAUTENBERG. It was unpleasant, but nature isn't fussy—it takes what it gets. Thank you all very, very much.

Before we adjourn, I would indicate that I intend to put in the record statements by Kathy Hines, a person from Maine, and Eric Olsen of the NRDC.

Thank you all very much. With that, this hearing stands adjourned.

[Whereupon, at 1:00 p.m., the subcommittee adjourned, to reconvene at the call of the Chair.]

[Statements submitted for the record follows:]

TESTIMONY OF DR. BENJAMIN F. CHAVIS, JR., EXECUTIVE DIRECTOR, THE NATIONAL ASSOCIATION FOR THE ADVANCEMENT OF COLORED PEOPLE

Mr. Chairman and members of the Committee, I am Dr. Benjamin F. Chavis, Jr., the Executive Director of the National Association for the Advancement of Colored People (NAACP). I am indeed pleased to have this opportunity to present testimony on the issue of "Superfund: The Need for Environmental Justice and Equal Protection and Enforcement."

During the last 10 years it has become increasingly clear and well documented that racial minority communities, in other words, people-of-color communities, in the United States are disproportionately exposed to a wide array of environmental hazards.

The National Association for the Advancement of Colored People is the oldest and largest organization devoted to the securing of equal rights and opportunities for America's most disenfranchised citizens. The NAACP is a non-partisan association with over 500,00 members in over 2,100 branches in the 50 states, the District of Columbia and aborad. The NAACP was founded in 1909 to confront, combat and eradicate the causes of racial discrimination and segregation in all aspects of American life.

Back in 1983 I coined the term "environmental racism" when it became obvious that people-of-color communities were being systematically discriminated against concerning environmental policy development and implementation, in regulatory enforcement as well as in the deliberate targeting of people-of-color communities for toxic generating and/or disposal facilities.

Through my previous work with the United Church of Christ Commission for Racial Justice, we were able to publish in 1987 the first national research study on this important subject entitled *TOXIC WATER AND RACE IN THE UNITED STATES*. This study revealed that "race proved to be the most significant among variables tested in association with the location of commercial hazardous waste facilities and that three our of every five African Americans and Hispanic Americans lived in communities with uncontrolled toxic waste sites."

The NAACP is concerned about the process of evaluation, reauthorization and the possible expansion of Supertund. For the record, Mr. Chairman, we have long been aware of your efforts and commitment to ensure environmental protection. We believe that this hearing is another important step in the process of clarifying critical issues that surround the efficacy and necessity of Superfund. Superfund sites that are in minority communities throughout the nation are in dire need of a greater response from the Federal government, in particular from the Environmental Protection Agency (EPA).

Reference is made to a report issued last year by the National Law Journal entitled "Unequal Protection: The Racial Divide in Environmental Law." The National Law Journal report revealed that under the Superfund Cleanup Program, abandoned hazardous waste sites in minority areas take 20 percent longer to be placed on the national priority action list than those in white areas.

The report also made an analysis of EPA's record of performance at 1,177 Superfund toxic waste sites. There appears to be an institutional attitude. as well as a systematic pattern of double standards of justice. double standards of enforcement, double standards of cleanup, double standards of explanation all based on race involving Superfund Cleanup.

For example, I recently joined our local branch president of the NAACP in the town of Columbia, Mississippi to protest the awful and painfully slow process of cleaning up the Superfund site in Columbia, Mississippi. I saw with my eyes African American families, particularly young children, living practically in the Columbia, Mississippi Superfund site. There has been adverse impact on public health in Columbia, Mississippi as a result of prolonged exposure to the multiple environmental hazards emanating from this particular site.

The pursuit of environmental justice is a paramount priority of the NAACP since it invokes principles of social justice and equal protection. The issue of environmental racism in our communities has become an issue of life death. We believe that there is a direct correlation between the disproportionate presence of toxic generating, repository and/or disposal facilities and pollutants in communities where racial minorities and poor people reside and the disproportionate increase in infant mortality, birth defects, cancer, and respiratory illnesses in these communities across the nation.

In conclusion, the NAACP supports legislation that will help to ensure nondiscriminatory compliance of environmental health and public safety laws and to ensure equal protection of the public health. Parenthetically, we have learned that Rep. John Lewis of Georgia plans this week to introduce the Environmental Justice Act of 1993 which seeks to establish a federal program to ensure equal protection of the public health and nondiscriminatory compliance and enforcement of environmental laws.

Mr. Chairman, this important hearing today on the implications of Superfund are, therefore, quite pertinent to the growing national debate on the issue of environmental justice. We in the NAACP view this question as a civil rights issue and will be mobilizing our constituencies across the nation to address this vital concern. Thank you for the opportunity to present his testimony.

Testimony for Senate Hearing
on Health Effects and Ecological Impacts

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUPERFUND, RECYCLING AND SOLID WASTE MANAGEMENT SUB-COMMITTEE

by
Penny J. Newman
Concerned Neighbors in Action

I live in the small rural community of Glen Avon located in southern California. Glen Avon has the unfortunate distinction of being the home of California's top priority Superfund site. The Stringfellow Class I Hazardous Waste Disposal site (commonly called the Acid Pits), is an abandoned surface impoundment facility consisting of a series of open pits, ponds and lagoons covering 25 acres above our community in a boxed canyon in the Jurupa Mountains.

In 1978, heavy rains caused the ponds to fill up, threatening the integrity of the dam holding back 34 million gallons of toxic wastes. In order to relieve the pressure against the dam a state agency pumped over 1 million gallons of toxic chemicals out of the site and into our unsuspecting community. For 5 days, water ladened with heavy metals (cadmium, chromium, lead, etc.); pesticides (DDT); solvents and organics (TCE, PCE, PCB's, etc.) flowed over public roads, into our yards and homes, and inundated the elementary school 1/2 mile directly below the site.

For five days, I sent my two sons off to school never

suspecting the danger to which they were being exposed. The children of our community played in the contaminated water because no one warned us of the presence of chemicals in what we believed to be rain water.

That incident sparked the creation of our community group, Concerned Neighbors in Action (CNA). We vowed that never again would anyone make decisions about our lives without our knowledge and participation. We were committed to ensuring that Stringfellow would be cleaned up permanently and our community would never be hurt again.

CNA and Stringfellow have played a long history and significant role throughout the life of Superfund. We've been used as an example of the best and worst of the program. Our commitment to ensure accountability and find positive ways to participate in the decision-making process has led to the creation of some innovative programs. We forced the formation of one of the fist Advisory committees bringing representatives from EPA, state agencies, county officials and the community together to share concerns and decisions. In 1984, we obtained funding through Superfund to hire the first technical consultant for the community (a program that was the model for the TAG program in SARA) and obtained funding for a community information center providing a central, local place for keeping residents informed. CNA won in federal court intervention status in the Federal Enforcement Action, a ruling the PRP's appealed to the U.S. Supreme Court. It was heard before the Supreme court in 1985 and we are still intervenors.

CNA obtained funding for a Physicians Symposium co-sponsored with the California Medical Association and the Health Officers Association of California to help begin educating treating physician to the health impacts posed by exposure to toxic chemicals. The program produced a video tape series and educational materials developed to be used at trainings around the state by the Department of Health Services. ATSDR staff attended the symposium using it as a model for their educational programs.

CNA has closely monitored the Superfund program throughout its history. I was the only person to testify at the Senate confirmation hearings in opposition to the appointment of Rita Lavelle as EPA Assistant Administrator for Superfund citing her conflicts of interests and close association with Stringfellow polluters. Later, in a classic "I told you so" situation, Stringfellow was a central issue in the Ann Gorsuch/Rita Lavelle scandal in EPA. CNA provided much of the documentation that ultimately led to the incarceration of Lavelle for perjury.

I also work as a community organizer with communities throughout the west until recently with the Citizens Clearinghouse for Hazardous Waste and currently as the Director of Center for Community Action and Environmental Justice. My work has brought me into contact with Superfund communities from the borders of Canada and Mexico.

We find even where the health threat is abundantly clear, action is slow to protect people. One example is the Silver Valley site in Idaho. This is one of the largest Superfund Sites in the nation, where mining activities have covered a 25 mile area with

high levels of lead. According to an EPA Inspector General's report, "...the blood-lead levels were the highest ever recorded. Of the 179 children living within one mile of the smelter, 99% had a blood-lead level over 40 ug/dl; the highest level recorded is 164 ug/dl; 41 children had a blood-lead level over 80."

The impact of lead is clearly documented and yet the response to the situation is to dig up yards on a patch work basis spewing dust everywhere and handing out helpful handy hints like damp mop your floors twice a day and wash children's hands when ;they come in from outdoors. This is clearly an inadequate response.

In Tucson Arizona, The Hughes Aircraft Superfund site has contaminated the drinking water of the largely hispanic community with high levels of TCE. On one street residents of 27 of 30 homes currently have, or have died of, cancer. The remediation of the TCE contamination has been air strippers installed next to the homes at breathing level. This approach has simply transferred the water exposure to air exposure.

Living near the Stringfellow site has had a devastating, dramatic affect on our lives. As lower-middle income families, whose one and only investment is in our homes, the devaluation of our property has been hard on our community. In 1984, radiation was discovered at Stringfellow. Subsequent testing in the community revealed that 70% of private wells had elevated levels of radiation prompting state officials to provide families with bottled water. Already devalued property plummeted to an all time low. Families were unable to sell their homes leaving us stranded and trapped. Medical expenses and inability to obtain health insurance has posed

an even greater economic burden on our families.

But by far the most devastating impacts have been on our health and the future risk to our children. My family exemplifies just some of the health problems we continue to seeing the community. My two sons were born and raised in Glen Avon. My oldest son, born six-weeks premature and barely weighing five pounds, suffers from allergic type reactions to everything and experiences severe asthma attacks. My husband and I would take turns lying awake at night listening to him breathe knowing that at some point we'd have to rush him to the hospital. If we took him too soon they'd simply send us home but if we waited too long it would become life threatening.

Eric also had a congenital hip defect that required him being in braces for the first 4 years. He has vision in only one eye and is classified as legally blind in the other. At the age of 6, he was rushed to the hospital in the middle of the night for emergency surgery - the removal of his gall bladder- an extremely unusual condition for a child.

My younger son suffered from severe skin problems. His skin looked like a dry river bottom; it cracked open and oozed making him vulnerable to infections. He developed severe asthma after starting school. After the '78 floods he began experiencing double vision and dizzy spells, to the point of being nauseated. I'd actually have to hold him to convince him he wasn't moving. He suffered headaches so painful he'd scream, begging to make it stop hurting. He was diagnosed as having seizures, and neurological problems like a mild Gilles de la Tourette syndrome, quadra-paresis

(a weakness of all 4 extremities). He had to do specific exercises daily to prevent his muscles from atrophying. The symptoms only stopped after he was removed from the school.

The chemicals have a dramatic, permanent impact on all body systems, especially respiratory, so that although many symptoms improve, damage is still there. We're finding that the immune systems for many of us has been damaged to the point where our bodies simply can't respond, making us vulnerable to continuing illness. And the threat of what may lie in the future looms over us. Of the 21 people on staff at the elementary school in 1978, when I worked there, 17 have either died or have severe, unusual diseases. In the past 2 years, 5 teachers have died of cancer. Another 45-year-old kindergarten teacher died of cancer last week, leaving 2 small girls behind. The chance of developing cancer in the future due to our exposure to the Stringfellow chemicals with its dozens of carcinogens is there for all of us and the future for our children is in great question. In one testing session where 4 young men between the ages o 18 and 21 underwent fertility tests, 3 were found to be sterile. As hard as it is to have your loved ones and friends dying around you on an almost weekly basis, the haunt question of the future health of our children and ramifications to future generations gives no ending to the nightmare.

Superfund has been an easy target for criticism, from corporate board rooms, the New York Times and even the President of the United States. Much of it is well deserved. Through our 15 years of involvement we have certainly had our share of complaints.

Most complaints have focused on the huge amount of money spent, the slow movement for actual cleanup at sites; the legal expenses in transactional costs - but we can't forget why Superfund was passed in the first place - American communities are suffering. Families are being hurt economically, children's health impacted permanently, and our friends are dying prematurely.

According to the National Research Council, over 41 million people live within 4 miles of a NPL site with close to 4 million people living within 1 mile. It is as big a disaster as any earthquake, riot, tornado, flooding or fire our country has experienced in recent years. The difference is that Superfund sites aren't as obvious and those responsible are influential.

It is only because Superfund has existed that abandoned sites like Stringfellow have received any attention. Through Superfund the continued exposures to chemicals at Stringfellow have stopped. We no longer get flooded out in heavy rains. We no longer have chemical dust blowing throughout the community. We no longer suffocate at night from the chemical stench from the site. Superfund liability forced the polluters to take responsibility for their actions. Before Superfund the corporations told us the site wasn't their problem - that we were on our own.

Under Superfund 507 "removal actions" such as building fences around the site, removing barrels, providing alternative water supplies, reduced the risk for 23.5 million people. Superfund eliminated direct threats posed to 950,000 people who had been at risk because of direct contact with hazardous waste. Removal actions at 92 sites resulted in 411,000 people receiving

alternative water supplies with 4,000 people either temporarily or permanently relocated from 26 sites. Removal actions at 403 sties resulted in waste removal, treatment or containment. Reduction or elimination of land contamination at 333 sites, eliminated the threat of direct contact with hazardous waste for more than 580,000 people who live within a one-mile radius of these sites. Those are direct actions that have protected people - real human beings - from deadly toxic poisons, and that is not a waste of money .

The real question is whether all the funding in the program is being spent productively and the evidence tells us it is not. Problems do exist. The waste and excesses for consultants and contractors is obvious. The expectations for complete cleanups in a quick manner has not been realized. The choices for remediation (containment or digging it up and hauling to another site) have not created permanent solutions and have resulted in the need to go back and re-do the site or add a new one to the list. The identification and implementation of treatment technologies for permanent solutions has not taken place.

No systematic program has been developed to find and evaluate all potential sites. Health assessments by ATSDR have been widely criticized and registries of exposed persons have yet to look at long term, low level exposures. The fact that poor communities and people of color are disproportionately affected - with them receiving more impacts and less response - has raised the issue of environmental racism/classism within the program. In the decision-making process, those most directly impacted have a difficult if not impossible time making their legitimate concerns and ideas

known, slowing down the process and creating unnecessary confrontation. Attempts at positive involvement like the TAG program has been bogged down in a swamp of bureaucratic paper work.

How do we fix Superfund? That's a big question. A lot of debate, ideas, and proposals are circulating on this question from the insurance industry, corporate entities and other special interests. There are commissions, coalitions, caucuses galore offering their ideas. I'd like to provide some limited suggestions at this forum.

Funding

There is a tremendous assault on the funding mechanism of Superfund which is based on the theory that the polluter pays. Specifically, the arguments focus on the liability issues. The argument is presented that the retroactivity is unfair; strict, joint and several liability forces PRP's to pursue other possible responsible entities resulting in delays and enormous transactional costs. And yet, no other funding mechanism has been forth coming with any detail. The only suggestion is for a public trust fund of some sort without the funding source delineated. Until a solid idea that maintains the premise of "polluter pays" comes forward we must stick with what we have.

Quick cleanups

As a community that has experienced the results of acting quickly only to have to turn around and redo the whole thing, we aren't as concerned with a quick cleanup as we are with a thorough, protective cleanup. In 1977, the estimated cost for total removal of chemicals at the site was $370,000. In 1980, the state moved

quickly to contain the site with a $4 million, multilayered clay cap only to have it fall apart during the first three months after completion. In 1980, we could have removed the chemicals for $12 million and been done, but instead the agencies opted for the "most cost effective method (translated to cheapest) and now we have had to go back and re-do the site. The current estimates range up to $800 million. The truly sad part is that people in my community are continuing to be exposed. In the last two months we have had four leaks through the "impermeable" clay cap, forcing the state to close the site to all visitors including the media. In the latest event Stringfellow split open, leaving a 10 foot wide, 2 foot long gaping hole, where chemical fumes could escape. We continue to waste money because we won't do it right the first time.

The key is to stop the exposures to people while we design the best cleanup. OTA's suggestion of a phased cleanup program has been supported in my community. Few if any sites can be treated by one technology to achieve permanent cleanup. Taking a step by step approach, as long as exposures are stopped as the first step, allows for a systematic, controlled effort.

Community Participation

A better way of providing for meaningful participation for those communities most affected within the decision-making process must be found. This should include aggressive measures to involve the community at the earliest stages with explanations of how the program works, and what it means, communicated in a clear manner that considers primary languages and cultures of the area. For an

aggressive outreach program EPA should develop a Citizens Access office that would be more than simply a public relations office for the agency, but acts as an advocate for the community affected.

There should be a menu of options available to the community, simplified and expanded Technical Assistance Grants, access to all information, and a recognized, legitimate role in the process, and allowed to participate in all meetings where remediation is discussed. Citizens should have a judicially enforceable right to intervene as full parties in administrative enforcement and judicial actions under Superfund.

Health/Risk Assessments

The experience around health studies/surveys/assessments have demonstrated the current inadequacy of our methods and instruments. These inherent inadequacies of the methods available for site-specific health studies (small size of the neighborhoods at risk the fact that epidemiology is a relatively broad instrument) make these studies unavoidably inconclusive. While advancement of our scientific knowledge is a worthy goal, simply gathering statistics doesn't address the real needs of the community. Superfund's health dollars should be used to achieve more relevant goals than performing studies. such as the following:

1. The focus of the government's effort should be on prevention of any additional exposure.

2. No community should have to demonstrate actual, observable health effects to get a timely clean up.

3. We must reorganize the efforts within those government agencies that have responsibility for doing environmental health studies and give one agency a clear lead (with independent funding) in this arena.

4. Primary care physicians need much better training to

recognize the effects of exposure and to treat patients who may have been exposed to toxic compounds. That agency must design a training program for these doctors and also go on the road to ensure that the training actually makes it into the physician community.

5. For communities unable to obtain health insurance, whether due to red lining due to their proximity to a Superfund site or inability to afford insurance, a local health clinic should be established.

6. National health care should include machine-readable diagnostic forms for physicians to use that would then be sent to the agency responsible for maintaining the comprehensive registry. Obviously, national health care should also be designed to include diagnosis and treatment of diseases and other health effects associated with exposure to toxic chemicals.

I appreciate your efforts to explore this difficult but important task of attempting to find an efficient, effective way to solve these horrific contaminated sites. As you examine the program with all its complexities, with all of its problem - please keep in mind what is at stake. It's the lives of my family and friends, the future of my children and grandchildren, and it's the survival of my community. And it is those same stakes in communities at thousands sites across America. Please don't desert us!

FROM THE DEPARTMENT OF HEALTH'S GLEN AVON HEALTH SURVEY PLAN

CHEMICALS FOUND AT STRINGFELLOW "ACID PITS" AND THEIR HEALTH EFFECTS

TOXIC EFFECTS

COMPOUNDS	EFFECTS
	Organic Compounds
chlorinated diphenyls (PCB's)	liver toxicity; gastrointestinal problems; dermatitis; possible carcinogen
chlorobenzene	irritant(skin,mucous membranes); Central Nervous System depressant
chloroform	irritant; liver, kidney toxicity; CNS depressant; possible carcinogen;
DDT	carcinogen; possible mutagen; irritant; nervous system effects; possible hepatotoxicity;
dichlorobenzene	irritant(skin, eye)
ethylbenzene	irritant(skin, eye); narcotic effects
hydrocarbons	toxicity varies depending on compound
napthalene	hemolytic agent; anemia; liver damage; convulsions; coma; eye damage; possible neo-plasma
oils	boils, folliculitis; hyper-pigmentation; toxicity varies with type of compound
paint sludges/thinner	toxicity varies, depending upon solvent used
phenols	carcinogen; liver and kidney damage; convulsions; gastro-intestinal disturbances; irritant

tetrachloroethylene(PCE)	Central Nervous System depression; liver damage; peripheral neuropathy; impaired memory; dermatitis; possible carcinogen
trichloroethylene(TCE)	carcinogenic; Central Nervous System depression; cardiovascular problems; gastrointestinal, liver, and kidney damage; respiratory irritant
xylene	irritant(skin, eye, mucous membrane); narcotic effects;

Inorganic Compounds, Elements, Residues

aluminum silicate	experimental neoplasms
ammonium perchlorate	irritant(skin, mucous membranes)
arsenic	carcinogen; lived, kidney, blood, nervous system damage; digestive disturbances; irritant(skin, eye, mucous membranes)
cadmium	carcinogen; neoplasms; pulmonary pathology; kidney damage; anemia
chlorides	toxicity varies widely depending on compound
chromium, Cr(III, IV, VI) -ions, chromium compounds	toxicity varies depending on compounds; some chromate salts carcinogenic(see also "chromic acid")
copper	suspected mutagen; high toxicity rating
cyanide	metabolic asphyxiation
flourides	irritant(skin, eye, mucous membranes); anemia; anorexia; weight loss; dental defects; gastrointestinal, respiratory, and nervous system problems

MINUTES OF THE 3/10 STRINGFELLOW PLANNING MEETING

Attendees: R. Neutra L. Goldman S. Swan
K. Satin D. Smith

The meeting began with Shanna reviewing the major findings of the study carried out in 2000 people from 600 households (200 "definite" exposed, 100 possibly exposed and 300 control). There were no excesses in overall mortality, cancer mortality, and adverse pregnancy outcomes. These outcomes were validated. Excesses were found for the incidence of all cancer and for skin cancer. Examination and blood chemistry work on children revealed that minor congenital anomalies were elevated in the exposed group; the blood chemistry work was unremarkable. Nineteen diseases were reviewed with statistically significant elevations seen for skin rashes, earaches, and angina. All 24 symptoms queried were more frequently reported by exposure area respondents than control participants with skin problems, earaches, and urinary problems being significantly elevated. On the average, exposure area respondents reported one more symptom than the control group.

ESSS' perception of community unresolved issues was next discussed. The following concerns were identified:

1. emigrants may be more ill than respondents and thus they need to be followed
2. future health effects may occur
3. not all people in the exposure area were included therefore effects may have been missed
    i. the point was raised that the real exposure may be proximity to the Pyrite Canal versus proximity to the site itself
4. laboratory exams should be made on everyone

The discussion then turned to ideas for future work at Stringfellow. It seemed to be the concensus of the group that there was little chance of any study providing an unequivocal answer about exposure or disease because of lack of exposure data, low likely exposure, and a small population. Thus there is little scientific basis for further study of the site but there is a political mandate to do a study (e.g., initiating a comprehensive follow-up). We can however implement some procedures which have a bearing on most of the hazardous waste site studies we do (e.g., population tracing, biochemical testing). Conversely, there are some pitfalls (e.g., setting a precedent for potentially extraordinary tracing and follow-up schemes, exposure evaluation, and clinical testing).

lead	poisoning; anemia; G.I. disturbance; neuro-muscular dysfunction; encephalopathy; congenital abnormalities; possible carcinogen
manganese compounds	manganism-poisoning; CNS intoxication; lung pathology; possible carcinogen
nickel	carcinogen; respiratory irritation; sensitization dermatitis
nitrates	gastrointestinal problems; CNS symptoms; possible carcinogen
silica	pulmonary fibrosis
sodium hydroxide	severe irritation(skin, eyes, mucous membranes)
sodium nitrate	high toxicity rating via oral exposure
sulfates	toxicity varies depending on compound
zinc	toxicity varies depending on compound (generally low)
	Acids
acetic acid	severe irritant (skin, eyes, mucous membranes); ulcers
chromic acid	severe irritant (nasopharnyx, larynx, lungs, eyes, skin); very high toxicity rating
cresylic acid (cresol)	hypersensitivity reactions; dermatitis; CNS disorders; gastrointestinal disturbances; liver, kidney, and lung damage
hydrochloric acid	irritant; severe burns
hydrofluoric acid	severe respiratory irritant; severe burns
nitric acid	pulmonary edema; tooth erosion; irritant (skin, eye, mucous membranes)
sulfuric acid	severe irritant; severe burns

Testimony of Terry L. Hale, D.D.S.
Chairman
Aspen Concerned Citizens
104 W. Cooper
Aspen, Colorado 81611
(303) 925 4450

Concerning:
Smuggler Mountain Superfund Site
Health Risk Assessment

Offered to:
Committee on Environment and Public Works
Subcommittee on Superfund, Recycling, and Solid Waste Management
Senator Frank R. Lautenberg, Chairman

United States Senate
Washington, D. C.

May 7, 1993

Chairman Lautenberg and members of the Subcommittee, I am Dr. Terry Hale, and I am here today representing the citizens of Aspen, Colorado, and particularly the residents of the Smuggler Superfund Site. I greatly appreciate this opportunity to share our thoughts and experiences with the EPA over the last ten years.

The EPA came to Aspen, Colorado in 1983 and ultimately put us on the Superfund list using, in addition to lead in our soil, toxic points from cadmium, which they claim to have found in well water. They admitted later, when challenged by Tom Dunlop, our environmental health officer, (who had already tested our water and knew we had no problem) that the test had been flawed. However, they said, once we were on the list, the only way off was to be remediated. Up until January, 1992, when we met with the EPA in Washington, D. C., our relationship had steadily deteriorated since 1983. Community concern and anger, however, dramatically escalated during that same time period.

How is it that Aspen, Colorado, one of the most environmentally conscious and health concerned communities - perhaps the healthiest population per capita in the United States - found itself in a bitter, ten year struggle to date against a thing called the Environmental Protection Agency? How did we get to a point two years ago on the Fourth of July, when our entire community, led by our mayor, John Bennett, promised to "sit in front of the bulldozers" to prevent the EPA from carrying out a proposed remediation to protect our health and environment?

Ultimately Aspen's water was found to be clean, as was our air. We do have high concentrations of lead in our soil left over from silver mining operations carried out in the late 1800's. Dr. Chris Weiss, the EPA's toxicologist, assured us and later went on national TV predicting that 99% of our children would be at risk of lead poisoning due to the levels of lead in our soil. That was using the famous computer biokinetic uptake model, which ignored real biological data.

The EPA told us they would dig up the contaminated dirt and build a mountain of it about 500 yards away from the site. Our citizens had lived on this site for over 100 years in apparent excellent health. We began to study lead toxicity with great seriousness. A young mother and nurse, Patti Clapper, with great public support, and without any help from the EPA, who said it wasn't necessary, demanded and got the Colorado State Health Department to run a blood lead study with ATSDR.

I was able to get the Aspen Valley Hospital medical staff to appoint a committee of physicians to study the existing evidence and to decide whether or not there was a health risk from lead in our community. We brought in consultation from the Kettering Institute in Cincinnati, who have studied lead since the late 20's. Everyone we talked to outside the EPA told us we had a political problem - not a health problem. They also told us that bulldozing dirt into the air would create lead dust which would be much more dangerous and more easily assimilated than if it were left in the ground. Contrary to Dr. Weiss's prediction, and demonstrating that there was no relationship between the soil lead and the blood lead, ATSDR's blood study showed our children with blood leads of 2.7 ug / dl,

and our adults at 3.2. This is, of course, way below CDC's level of concern, which is for anything greater than 10 ug / dl.

Our hospital committee consulted with a wide variety of medical and scientific experts. They used CDC and its written standards as a Bible. The unanimous conclusion reached by the Aspen Valley Hospital staff was that there was no evidence of a health risk to our population from the lead mine tailings.

No one should stand in opposition to the CDC's October, 1991 bulletin, "Preventing Lead Poisoning in Young Children." And that no one should include the EPA. The bulletin states: 1) the only way to test for lead poisoning is a blood lead test; 2) anyone whose blood lead level is below 10 has no problem; 3) according to the CDC bulletin, there are five profile characteristics of children at high risk - Aspen matches none of them.

The EPA's stated goal for cleanup is to get 95% of the population below 10 ug / dl. Clearly, we are well below that level of concern. If you live in Cincinnati, you have a blood lead of 16. If you live in Boston, it's higher. The background level of rural Colorado is 6 to 8. We are an average of 3.0 children and adults and have no blood poisoning and require by EPA's own standards, no remediation.

ATSDR's Dr. Gina Terracino told us, as far as she knows, the agency has never tested a community with lower blood leads anywhere in this country. She also told us there was no relationship between the lead concentrations in the soil and our blood lead levels - a point we have been

trying desperately to get the EPA to acknowledge, since they have based Aspen's Superfund status entirely on the lead soil concentration.

Can you begin to understand our frustration? We don't care about the concentration of lead in our soil because it does not pose a health threat. There is no pathway for that lead to get into our bodies. Our blood leads are the purest you are likely to find anywhere. What a tragedy that for ten years and ten plus million dollars the EPA has focused on the wrong issue! The issue in lead poisoning is blood lead levels, not soil lead levels.

Current science and the CDC bulletin tells us that lead poisoning comes from lead paint residue and gasoline fumes, not from mine tailings. The lead in our soil in Aspen, Colorado has obviously had no impact on our blood lead levels. We know that. The CDC knows that. ATSDR knows that. And our goal has been to get the EPA to accept that fact.

Question: What can possibly be the point of a remediation by EPA standards when you start out with a blood lead of 3.0 for the entire community? Explain to a mother of a lead paint poisoned child in the inner city with a blood lead of 35 what the EPA is doing in Aspen, Colorado for ten years and ten million dollars focused on people with 3.0 blood leads.

The issue of financial liability is something we find particularly offensive. The early miners broke no laws at the time and had no intent to harm. That Superfund or anyone else can take the innocent owner of a house trailer on that mine site one hundred years later and threaten to sue

them for "cost of cleanup" is unconscionable. Yet, since being put on Superfund, our residents have had a veritable gun to their heads, and their property rights have been taken from them. They have been unable to get loans or financing on their property for any reason. Fannie Mae, the government mortgage company, did not trust the EPA not to sue a lien holder for cleanup costs. Some of our older citizens have wanted to sell, move, and retire, and have been virtual prisoners in their own homes for the last ten years because of this unfortunate side-effect from Superfund site designation.

In January last year we met with the EPA in Washington, D. C. This meeting resulted in two positive steps. With help from our environmental senators, Hank Brown and Tim Wirth and EPA's Superfund chief, Don Clay, an attempt, was made to satisfy Fannie Mae's need for a covenant not to sue. Sadly, however, a year and a half later, that effort still remains unsuccessful. The EPA further agreed at that time to responsibly begin to resolve the issue of health risk in Aspen. To that end, EPA agreed to Aspen's request that a blue ribbon panel, called the Technical Advisory Committee (TAC), would be created.

The TAC was to be made up of six of the world's leading public health physicians, geologists, soil toxicologists, and related scientists. The TAC was mutually chosen and agreed upon by EPA and Aspen. They were all renowned and expert in the area of our alleged toxicity. They were convened in Aspen for three days in October, 1992. They were sent written information by Aspen and by EPA 30 days prior to the conference. Dr. Chris Weiss and others presented EPA's position on the site and its

health risks on the morning of the first day. Aspen hired a scientist from the Kettering Institute and a soil geologist to present our position in the afternoon. The TAC met sequestered to consider the evidence and then held a press conference when their task was completed to announce their findings.

Aspen citizens agreed to accept the findings of this committee several months before they were convened. It is important to note that we trusted these scientists completely. We had lost all trust in the EPA. The TAC had total community support. The EPA had none.

We drafted three basic questions for the TAC committee to answer, which I will now read from their final report:

1) Does the existing site-specific data and scientific literature provide adequate evidence which confirms that the soil lead in the Smuggler Mountain Superfund Site poses a current realistic health threat (i.e.unacceptable risk of disease or impairment) to any of the residents on or near the Site?

Answer: The Committee unanimously concludes that the answer is no.

2) If the answer to questions 1 above is no, is there a reasonable probability of such a threat developing in the future?

Answer: The Committee unanimously agrees that there is a possibility of a future threat, but the likelihood is small. If the demographics, land use and environmental conditions remain essentially unchanged at the Site, we do not anticipate any future health threat (risk).

3) Having made this health threat assessment, what is the TAC's recommended public health action, if any, in order to protect the current and future health of residents from the soil lead effects? Answer: The Committee unanimously agrees that there is no need for soil removal from the Site.

There were additional recommendations which paralleled an offer made for settlement of the issue by Aspen some six or seven years ago which involved some landscaping of the area and some random blood testing over time to assure that the situation remained the same.

Aspen was pleased with the results. The TAC condensed ten years down to a few weeks and reduced a projected $20,000,000 clean up to $500,000, which included the cost of their meeting. The TAC remedy created total community support and trust where there was none before. These ecomomies and accomplishments are astounding in terms of time, money, and public satisfaction. This approach can and should be used in many Superfund situations.

I am currently working on a conference to be held at and hosted by the City of Aspen and The Aspen Institute for some 150 participants in September of this year. We intend to bring together all the appropriate Senate and Congressional leaders along with Vice President Al Gore, EPA director, Carolyn Browner, and key EPA personnel, scientists, and industry people to allow for a discussion of the issues we have discussed today as they relate generically to the Superfund.

We want to give Carolyn Browner a chance to hear from some of her long time customers. We and others like us have some valuable input to share. We hope EPA will listen. We want our country's citizens to respect and appreciate the EPA and the Superfund program.

It is very clear to us in Aspen, and I hope to you here today, that Aspen, Colorado, does not fit the geological, commercial, medical, or toxicological profile of the toxic site Superfund was intended to deal with.

We feel Superfund gets into a lot of trouble with its approach to liability and with the word "potential." You could take the premise that Aspen, Colorado, could be hit and destroyed by a comet. Accordingly, you could build a steel roof over Aspen to protect it from that comet. The potential risk is there, I admit. However, potential is a meaningless word and opens up the entire universe without the word "realistic" in front of it. If EPA prioritized and dealt only with realistic health risks, it would radically improve their effectiveness. In order to do that, this organization, which claims to protect the public health, would have to break down and hire a few physicians. It is truly appalling that the EPA employs none.

The EPA's litigious approach to environmental problems must be re-thought. As I speak today, my own county government is spending thousands of dollars each month preparing for the defense of a cost recovery law suit filed against them by the EPA. Both the EPA and Pitkin County are spending time and money for a trial, which in all likelihood, will never come to pass. That my local government is thought to be a

"potentially responsible party" for the lead in the soil is, of course, absurd. That anyone in light of the TAC findings would continue to assert that the citizens of Aspen should pay for EPA's erroneous ten year presence and their incredible and useless expenses during that time is an outrage and an obscenity.

With the budget and responsibility the EPA has, it must have the best science. It needs to be the first to know - not the last. It must stand with CDC - not against it. We believe in the EPA. They have an enormously important task. They must be the best they can be. They are not!

The cost to our community over the last ten years in anxiety, time, emotion, energy, and money has been truly unbelievable. It is in our community's opinion unconscionable and tragic that EPA has spent so much of its time and money unnecessarily when it is so desperately needed elsewhere. EPA should only commit its resources to mitigate realistic health risks and not waste time and funds that do nothing at all to protect the public health and environment. As the Dali Lama so eloquently says, "If you can't help people - then, please, at least try not to hurt them!"

Aspen appreciates this opportunity to share our experiences. We remain committed in every way to helping the EPA to be the best it can be, and we applaud the efforts of this committee in seeking that goal.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2466

JUN 22 1993

Ref: 8HWM-SM

Honorable Frank R. Lautenberg,
Chairman
Subcommittee on Superfund, Recycling,
and Solid Waste Management
Committee on Environment and Public Works
United States Senate
Washington, D.C. 20510

RE: Response to the Testimony of Terry L. Hale, D.D.S. before the Superfund Subcommittee on May 7, 1993.

Dear Mr. Chairman:

I am writing to respond to the testimony of Terry Hale, D.D.S., regarding EPA activity at the Smuggler Mountain Superfund Site in Aspen, Colorado. Considering the technical complexity and somewhat personal nature of the testimony, I appreciate the opportunity to provide EPA's position on the scientific aspects of Dr. Hale's testimony directly.

Dr. Hale raised many important points during his testimony to the Subcommittee. Certainly, the frustration which he and other members of the Aspen community have expressed to EPA rings clearly throughout his written report. I believe that I speak for many of the Regional EPA staff when I say that we empathize with Dr. Hale's frustration with the litigious and resulting sluggishness of the present Superfund process. We are heartened by Dr. Hale's support for EPA science and his commitment to EPA's mission. However, while I cannot speak to risk management or legal aspects of the Superfund activity on the Smuggler Mountain site, I welcome the opportunity to clarify Dr. Hale's testimony regarding: (1) certain aspects of the site-specific risk assessment; (2) our scientific position relative to the Centers for Disease Control on the issue of lead-contaminated soil; and (3) our scientific position regarding the implementation and support of human biomonitoring on this and other Superfund sites in Region 8.

I recall Dr. Hale's presence at two or perhaps three of the many meetings I have had with the Aspen community regarding Superfund risk assessment issues. Despite my sincere invitation to do so offered in 1991 (Weis, 6/13/91), Dr. Hale has never called my office to discuss or clarify any of the scientific or technical points which he raised in his testimony to the Subcommittee. I am not aware that Dr. Hale has ever written to me to request information regarding the site risk assessment, EPA risk assessment policy, or site specific

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data. Therefore, I find it curious to be clarifying Dr. Hale's misconceptions through the level of the United States Senate. However, this level of attention has always been demanded by the community of Aspen and, in part, explains the high visibility, expense, and unnecessarily long EPA involvement with the Superfund activity there.

For the committee's information I serve as one of three Regional Toxicologists within the Superfund Management Branch, U.S. EPA, Region 8. I no longer serve as the site toxicologist for the Smuggler Mountain area and have not served in that capacity for approximately 14 months. During my tenure with the Agency, I have served as an advisor to management on toxicological aspects of approximately 45 Superfund sites and approximately the same number of emergency response actions within our six-state Region. In my service to the Agency, I have provided toxicological support in a variety of situations ranging from acute human exposure incidents involving weapons-grade nerve agent to answering public questions about exposure to household chemicals. Prior to joining the Agency in 1989, I worked at the University of Virginia School of Medicine under two consecutive awards from the National Institutes of Health. I hold a Doctorate in both Physiology and Toxicology, and my dissertation work focused upon the biophysics and toxicology of heavy metals. During my graduate work, I served as a toxicological consultant to the State of Michigan where I helped in the ranking of over 200 hazardous waste sites for proposal to the, then newly formed, Superfund program. I am presently working with researchers at the Centers for Disease Control and the National Institutes of Environmental Health Sciences to improve our understanding of lead exposure. I also serve on a national multi-agency (CDC, EPA, ATSDR) workgroup to coordinate Federal lead program activity. I am certified by the American Board of Toxicology and in 1991 received personal commendation from the EPA Administrator for service to the Superfund program.

SITE SPECIFIC RISK ASSESSMENT:

(1) In his testimony, Dr. Hale indicates **(page 2)** that EPA has run an Uptake Biokinetic model (UBK model) to predict risk at the Smuggler Mountain site. EPA's risk assessment for the site was completed in 1986 by a well-respected risk assessment consulting firm, Clement International. This risk assessment and the associated Remedial Investigation served as a foundation for an Agency Record of Decision (ROD) for the site in September, 1986. **The UBK model which Dr. Hale refers to was not developed in 1986 and was not used in support of EPA's Record of Decision (1986).** To my knowledge, the only Agency use of the UBK model for this site was conducted in response to a request during the summer of 1990 from an Aspen citizens group called the Clean Air Advisory Board (CAAB). In this case, the UBK model was employed in a focused and very limited capacity on the site.

Regarding statements made in the popular media which were apparently offending to Dr. Hale, Region 8 has a long-standing policy of openness and complete access to the citizens we serve and to the press. We feel strongly that such openness is vital to our ability to serve the public. I hold a highly visible position as Regional Toxicologist. I find myself a subject of media attention more often than I would prefer throughout our six-state Region.

I do not, however, have control over editorial agendas of individual reporters. As a scientist, I prefer to make decisions based upon sound scientific evidence; and to be judged by my own scientific writing, not by popular media which may have been edited out of context.

(2) Also on **page 2** of his testimony, Dr. Hale implies that EPA was not supportive of the conduct of biomonitoring for childhood blood lead at the site. As Dr. Hale correctly indicates, such monitoring was specifically requested by a citizen (nurse and mother) within the community. The monitoring was also requested by the Aspen Clean Air Advisory Board (CAAB, 6/5/90). EPA is <u>not</u> well equipped to conduct such biomonitoring out of the Regional office and indicated this to the Aspen community leaders. However, EPA's Office of Research and Development (ORD) is clearly recognized internationally as a foremost source of expertise in the area of lead exposure and epidemiology. We have joined with the American Medical Association (AMA), the Centers for Disease Control (CDC) and the Agency for Toxic Substances and Disease Registry (ATSDR) in support of such monitoring in areas of high lead exposure potential. Region 8 has a clearly stated management policy which supports the use of such information <u>within scientifically credible limits</u>. Apparently, Dr. Hale is unaware that, on at least two documented occasions, I specifically indicated my support for such monitoring on the Smuggler Site (Weis, 8/3/90; Weis, 6/7/91). The blood-lead study was funded by ATSDR through Senate appropriation to EPA and was initiated during late summer in 1990 by researchers from the Colorado Department of Health.

(3) Dr. Hale mentions the *Ad Hoc* Committee report prepared and submitted to EPA by Robert E. Hunter, M.D. of the Aspen Valley Hospital (Hunter, no date) (**page 3 of Hale testimony**). Dr. Hunter is recognized for his specialty in the area of osteopathic medicine and EPA respects the clinical opinion of the *Ad Hoc* committee. We respectfully disagree with several technical points raised by the Committee as indicated in our response to them (Weis, 8/22/91). Our response included questions we posed to the *Ad Hoc* Committee and an invitation to interact further on the important issues which they raised. We have not as of yet received a response from the Committee. EPA <u>did</u> approach the medical community in Aspen in the fall of 1990 for the purpose of obtaining their opinion (long before the release of the *Ad Hoc* Committee report). At that time, physicians at the Aspen Valley Hospital indicated disinterest in speaking with us regarding the Superfund activity in Aspen. However, we remain open and willing to discuss these issues further with the Aspen medical community.

On **page 5** of Dr. Hale's testimony, he mentions the formation of the Aspen Technical Advisory Committee (TAC). We strongly agree with Dr. Hale regarding the usefulness of the TAC approach to resolving scientific issues surrounding risk assessment. During my service to EPA's Region 8, I have supported the development of at least four such independent and highly qualified committees to resolve controversial issues in risk assessment. The formation, development, and general conclusions of the TAC have my full support. The conclusions drawn by the TAC, although stated in language apparently more palatable to the Community of Aspen than that used by EPA, are not significantly different

than those stated by my office (Weis, 2/26/90). In their report, the TAC states, "***the berm deserves special attention. Because of extreme contamination of the berm, it should be capped and covered with clean soil, then planted with appropriate vegetation.***" They go on to state, "***[a] program of blood lead surveillance should be instituted for young children. At a minimum, the frequency of testing and interventions should be consistent with the program for children with low risk of lead exposure as described on Page 93 in 'Preventing Lead Poisoning in Young Children (CDC, 1991)'***" (TAC, 1/27/93, underline added). Regarding this last statement, ATSDR has indicated that they feel that the site is consistent with a screening program appropriate for high risk of lead exposure (Lybarger, 1993). **Additionally**, the TAC recommended that common-use areas be similarly covered to break exposure pathways and that residents who garden should take special care to avoid exposure through plant uptake of lead. These TAC recommendations are nearly the same as those made by CDC in 1984, ATSDR has repeated on several occasions and which I have indicated (Weis, 2/26/90).

To the best of my knowledge, EPA management fully supports and intends to implement the TAC recommendations.

In summary, EPA risk assessors recognize and respect the diversity of scientific opinion regarding the issue of soil lead exposure in Aspen and elsewhere. We have taken a position which is both moderate and within the range of scientific opinion on this issue. Indeed, while reviewing the administrative record in preparation for this letter I am struck by the consistency of opinion among the wide variety of public health agency experts who have officially commented on the site. We continue to welcome interaction, scientific dialogue, and alternative interpretations of the available information from the citizens of Aspen, the medical community of Aspen or any other interested parties on the issue of risk assessment.

EPA SCIENTIFIC POSITION RELATIVE TO THE CENTERS FOR DISEASE CONTROL:

Dr. Hale implies that EPA "*stands in opposition to the CDC*" with respect to our assessment of risk on the site. This is not the case, as evidenced by the various statements presented below.

As long ago as 1984, the PHS-CDC recommended that "***appropriate measures be taken to maintain the stability of the areas of greatest contamination***" (CDC, 6/18/84). Two years later, PHS-ATSDR concluded that "***[t]he lead concentrations [on the site] pose an unacceptable risk to residents of the Smuggler Mountain site as well as residential and recreational areas***" (ATSDR 1986). In response to this statement, EPA constructed a fence which precluded contact between children on the site and the areas of heaviest contamination. The temporary fence is still in place. Again in 1991, ATSDR reaffirmed their concern for the site by stating, "***Based upon the available site-specific data related to exposure potential and the growing concern about subtle adverse effects of lead occurring at lower and lower [blood lead] levels, ATSDR concurs with EPA that the levels of lead detected at the***

[Smuggler Mountain site] pose a health concern to young children and women who are or do become pregnant."

On page 4 of the testimony, Dr. Hale states: "*current science and the CDC bulletin tells us that lead poisoning comes from lead paint residue and gasoline fumes, not from mine tailings.*" In general, I disagree with Dr. Hale's statement regarding lead exposure to mill waste and resulting elevation of childhood blood-lead levels. We are aware of at least a dozen studies conducted with the specific purpose of determining the relative hazard of mill tailing (Mushak, 1991). Taken together, these studies clearly indicate that milling waste can pose a threat to young children under many conditions. EPA recognizes and has consistently stated (since the initial risk assessment was released in 1986) that soil lead associated with mine and mill waste, due to its lower solubility, is likely to be less hazardous than other types of soil lead. However, the extremely high concentrations and chemical nature of the material in the heavily contaminated areas of Aspen remain a concern to most or all of the many expert risk assessors who have reviewed the site data. This includes individuals at ATSDR, CDC, the Colorado Department of Health, EPA and now the Aspen TAC. In addition to these groups, who are directly associated with the regulatory aspects of the Aspen site, several otherwise disinterested academic groups have been compelled to make formal statements about the contaminated areas of the Smuggler site:

(1) Researchers from Colorado State University and the Front Range Community College who have measured lead uptake into plants in Aspen (Boon and Soltanpour, 1992):

"It is concluded that those Aspen garden soils that are located on top of silver mine dump materials [the berm] are contaminated with Pb, Cd, Zn and pose potential health hazards, especially to children."

(2) Researcher from the University of Maryland (Silbergeld, 2/5/92):

"Lead is neurotoxic to all children, not just poor, inner city, minority children, as implied.... Yes, lead is a neurotoxin even in Aspen."

INTERPRETATION AND USE OF HUMAN BLOOD-LEAD STUDIES FOR THE PURPOSE OF RISK ASSESSMENT:

Perhaps one of the most important clarifications required about Dr. Hale's testimony regards the interpretation of the blood lead screen which was conducted in Aspen under funding of ATSDR. Blood-lead studies have limited usefulness for the purpose of assessing exposure risk to environmental lead contamination. Such studies are transient in nature reflecting only recent exposure. The investigators who conducted the study stated this clearly on more than one occasion (Mangione, 6/16/90; ATSDR, 1992). ATSDR reiterated this concern very clearly in their May 1992 Analysis Paper titled **Impact of Lead-**

Contaminated soil on Public Health: "***Even if blood-lead levels are not elevated, the site should not be dismissed as posing no potential health hazard. Potential seasonal variation of exposure conditions; the half-life of lead in the blood stream; and limitations of any screening methods used, especially study design (power representativeness of blood and soil samples), should be evaluated.***" There were 29 children within the age group of concern who participated in the screening program at the Smuggler Mountain site. This extremely small sample size, the lack of appropriate environmental data to go along with the blood lead information, and variability in the analytical methods used limits the usefulness of the blood lead study conducted in Aspen for the purpose of risk assessment. More importantly, the area of greatest concern for exposure, the berm, was fenced by EPA in 1985 to temporarily limit its use as a play area for children. Despite EPA's interim measures to reduce exposure, and the small sample size, the study did identify one individual whose blood lead was probably elevated as a result of exposure to site-related contamination.

SUMMARY:

It is my hope that the Subcommittee will recognize, from the evidence presented in this letter, that EPA risk assessors have taken a moderate and scientifically supported position with respect to the risk assessment for the Smuggler Mountain Superfund site in Aspen, Colorado. In setting our assessment of risk for the site, we have been entirely consistent with assessments derived by two other Federal Agencies (CDC and ATSDR) the Colorado Department of Health (CDH), and the Aspen Technical Advisory Committee (TAC). Additionally, our well-supported scientific opinion regarding exposure to the contaminated areas of the Aspen site registers well within the range of opinions from the academic community.

We maintain great respect for the opinions of community members who have vested interest in the Superfund activity on the Smuggler Mountain site. We have tried to receive their comments with an open attitude and with an understanding of the difficulty which the community is experiencing with the Superfund process. Unfortunately, no degree of "environmental awareness" on the part of the Aspen community will change the physical/chemical nature of the industrial waste located in residential Aspen. The waste is of fine particulate, heavily laden with lead and chemically similar to lead-based paint. The material is directly adjacent to childhood play areas, and their exposure to this material should be avoided.

I hope this response to Dr. Hale's comments clarifies EPA's scientific position with respect to the Smuggler site. References indicated herein can be provided to the Subcommittee upon request. Please contact me at (303) 294-7655 if I may provide anything further.

Sincerely,

Christopher P. Weis, Ph.D., D.A.B.T.
Region VIII Toxicologist

cc: T. Hale, D.D.S.

TESTIMONY BEFORE U.S. SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, SUBCOMMITTEE ON SUPERFUND, RECYCLING AND SOLID WASTE MANAGEMENT BY TRYGVE B. SLETTELAND, MAY 6, 1992

My name is Tryg Sletteland. I am a fish and wildlife conservation consultant from Redding in far northern California. I am here today as director of the Sacramento River Information Center, whose purpose is to gather, analyze, display and disseminate data on Sacramento River ecology and conservation/restoration activities, in order to inform and stimulate action by a broad public about the condition, needs and future of the ecosystem. From 1979 to 1986 I worked as an environmental planner for the California Department of Transportation in Redding. Since then I have directed two grassroots environmental groups, the Sacramento River Preservation Trust and Sacramento River Council. I completed a B.S. in speech from Northwestern University and M.A. in anthropology from California State University, Sacramento.

Redding is a city of about 70,000 people located on the state's largest river, the Sacramento, some ten miles below Shasta Dam. Our municipal water intake is about three miles below the release point of toxic heavy metal-laden water from the Iron Mountain Mine Superfund site 9 miles northwest of Redding. Iron Mountain Mine is the largest discharger of heavy metals to surface waters of the entire United States. It puts out about one-quarter of the entire national discharge of copper and zinc to surface waters from municipal and industrial sources. The toxicity of its output is roughly equal to the one tank car Cantara Loop herbicide spill every 24 hours. The pH of the mine drainage, about 2.0, is the most acidic anywhere in the world, approaching that of battery acid.

This acid mine drainage has produced 33 major fish kills since 1940, wiping out millions of Sacramento River salmon during uncontrolled spill episodes from Spring Creek Debris Dam. The heavy metals clog the gills of young fish in the state's top salmon nursery area, suffocating them by the hundreds of thousands in a single event. Six of the fish kills have been catastrophic, defined as killing over 40 percent of the fish in the upper 20 miles of the river.

The value of the Sacramento River sport and commercial salmon fishery, which provides more than seventy percent of all salmon caught off California, has been estimated at up to $200 million in a good year. Salmon abundance is often used by biologists to measure the health of the Sacramento River ecosystem. Recent figures confirm that these populations are in jeopardy of extinction. Indeed, the winter run, one of four races of Sacramento River chinook, has been listed as an endangered species since 1989. In 1969, 316,000 salmon were counted at the newly constructed Red Bluff diversion dam. That number has fallen precipitously ever since, and the last three years have set consecutive records lows of about 49,000 (1990), 39,000 (1991), and 32,000 (1992).

In recent years, the Bureau of Reclamation has provided massive releases from Shasta Dam to dilute uncontrolled spills from the mine. Last year, in the sixth year of the most recent California drought, about 100,000 acre feet of water, valued at $15 million, had to be spent for this purpose. What is even more worrisome is the scenario in which an uncontrolled spill from the Spring Creek debris dam coincides with peak runoff throughout the upper watershed when flood control criteria are in effect. When this occurs, as it nearly has the past two winters, flood control takes priority, and the federal government signs a death warrant for many, many millions of dollars worth of salmon.

What is being done about this problem? The sad truth is that, were it not for Superfund, nothing would be in the works to adequately control this potentially explosive and ever threatening environmental disaster. As it is, EPA's plan to collect and treat most of the acid-laced runoff at the source is now being implemented. The treatment plant scheduled to be built at the site this year will remove over ninety percent of the heavy metals from the largest sources of contamination at the mine and dispose of them safely in the inactive open pit mine at the site. Another important component of reducing this enormous problem which Superfund will help to move forward on a 5-year construction schedule is enlargement of the dam on Spring Creek below the site. Increasing the capacity of the reservoir will greatly reduce the possibility of an uncontrolled spill.

Other proposed alternatives, including the one favored by the owners of the mine, would plug and inject neutralizing agents into the problem areas inside the mine. While these containment alternatives are more attractive on the corporate bottom line, they ignore the enormous peril to both the salmon fishery and Redding residents should the deeply faulted mountain spring a leak under the enormous pressure that would be created over time. We cannot afford to take the huge environmental risk associated with this experimental approach and -- especially in light of successful legal efforts by the corporations liable for the mine -- are fortunate to have Superfund to guarantee protection of our health and natural resources.

Without Superfund, we would have to face other potential hazardous waste disasters as well. We would be at the mercy of abandoned mines throughout the West, mercury from mines above Clear Lake in nearby Lake County, and asbestos from the Coalinga area being washed down the California Aqueduct into Los Angeles. The prospects of losing Superfund are frightening to a fishery conservationist and father of two drinking the water in the shadow of the world's largest source of pollution from copper, zinc, cadmium and other toxic heavy metals.

Senators, the organizations I represent ask you to reauthorize Superfund. In Redding and northern California, we would be lost without it. Thank you for the opportunity to testify here today.

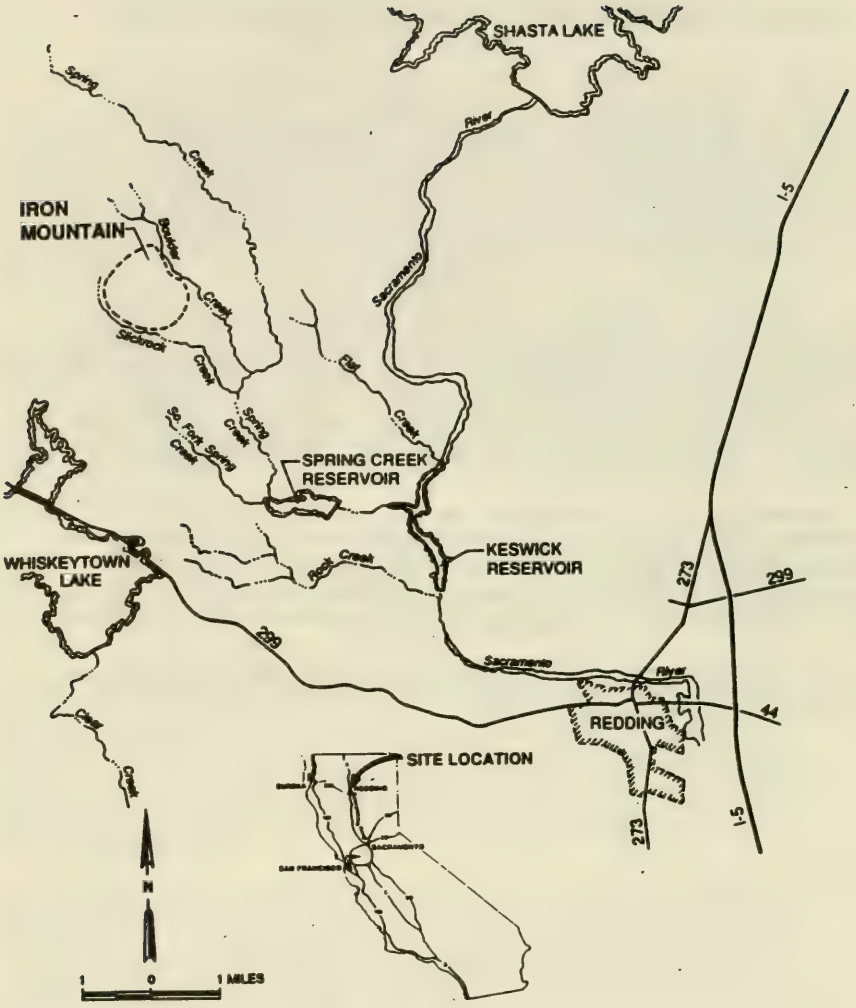

FIGURE 1
LOCATION OF
IRON MOUNTAIN SITE
IRON MOUNTAIN MINE ROD

RDD990017.FS.RD SEPTEMBER 1992

TOXIC POLLUTION OF THE SACRAMENTO RIVER

SACRAMENTO RIVER INFORMATION CENTER
RESEARCH REPORT NO. 1
MARCH, 1993

FOREWORD

The Sacramento River Information Center and its governing body, Shasta Natural Science Association, gratefully acknowledge the strengthening suggestions and financial support of the following organizations in preparation and publication of this summary report:

California Department of Fish and Game
California Rice Industry Association
Central Valley Regional Water Quality Control Board
Sacramento River Council
Simpson Paper Company

This is the first in a series of research reports we plan to produce to fulfill the Sacramento River Information Center's mission to *gather, analyze, display and disseminate data on Sacramento River ecology and conservation/restoration activities, in order to inform and stimulate action by a broad public about the condition, needs and future of the ecosystem.* We hope that you find the report useful. Any comments or questions can be addressed to us at P.O. Box 990185, Redding, CA 96099.

Tryg Sletteland
Director

INTRODUCTION

The following report briefly summarizes some current knowledge about toxic pollution of the Sacramento River between Keswick Dam and Collinsville, located as shown on Map 1, page 10 of this report. This is the entirety of the Sacramento River proper that runs freely and is accessible to sea-run fisheries such as salmon and steelhead trout. In this 302 mile stretch of the river, there are many major dischargers of effluents containing substances classified as hazardous to fish, wildlife, and man. There are also countless minor dischargers of substances which in the aggregate pose a serious threat to aquatic life and other beneficial uses of the river.

The toxics and other harmful substances being discharged into the Sacramento River include heavy metals, polynuclear aromatic hydrocarbons, sediments, dioxins, pesticides, and warm water lethal to incubating salmon eggs. Some have been the targets of very effective clean up programs; others, to the detriment of the river's health, have either been largely ignored or are currently being addressed by regulatory agencies and/or conservation action groups.

SOURCES OF INFORMATION

Data on river pollution are available as a result of the permits required for all facilities that discharge waste directly to California surface water bodies. These are known as National Pollution Discharge Elimination System (NPDES) and Waste Discharge Requirement (WDR) permits. The Central Valley Regional Water Quality Control Board (Regional Board), a State agency, administers these permits for discharges into the Sacramento River.

A 1990 Regional Board report provides an extensive inventory of point source discharges to the Sacramento River. See footnote (1) on page 9. Data on 86 major point source dischargers operating under NPDES/WDR permits are characterized and categorized in Table 1 on page 11 of this report.

EFFLUENT TYPES

Sewage from wastewater treatment plants contribute 51.9 percent of the total volume of permitted discharges to the Sacramento River, with over one-quarter of the total NPDES inflow to the river -- 180 million gallons per day (MGD) -- coming from one source, the Sacramento Regional Wastewater Treatment Plant. Other cities discharging treated wastewater include Redding (8.8 MGD), Red Bluff (1.90), Corning (2.46), Chico (5.0), Oroville/Butte County (6.50), Yuba City (7.0), Beale Air Force Base (5.0), Roseville (18.0), West Sacramento/Yolo County (5.0), and Vacaville (8.0).

Other point source effluent types that contribute high inflows include fish hatchery waste (32.4 percent of total NPDES inflow to the river), storm water discharge (8.9 percent), and plant cooling water (5.3 percent). The other types of NPDES dischargers listed in Table 1 contribute the remaining 1.5 percent of the total.

THE DILUTION FACTOR

The U.S. Environmental Protection Agency (EPA), which assesses the toxicity of effluents contributed to the Sacramento River, stresses the importance of calculating dilution ratios for point source dischargers. With most pollutants, a point source is not considered dangerous if the dilution is greater than 1 part effluent to 10,000 parts river water. A discharger is considered a potential problem if dilution is less than 10,000:1.

Table 2 lists the major point source dischargers to the Sacramento River, using worst-case dilution factors calculated for the periods of the year with the lowest flow volumes. The Sacramento Regional Wastewater Treatment Plant has the lowest dilution factor of any point source discharger, ranging from 80:1 in a high river flow year to 37:1 in a low flow year. Coleman National Fish Hatchery in Shasta County has the next lowest dilution ratio, ranging between 88:1 and 56:1.

While NPDES point source dischargers contribute less than one percent of total Sacramento River inflow during dry years, non-point source dischargers of agricultural drain water contribute up to 30 percent of the total inflow to the river during the low flow season of a dry year. The remainder of the inflow is from tributaries, principally the Feather and American rivers. Problems resulting from drain water containing agricultural pesticides have occurred in the stretch from Colusa to the American River confluence, particularly during low flow periods when dilution ratios are in the 3:1 range.

STATUS OF REMEDIAL ACTIONS

Heavy Metals

The primary point source of heavy metals discharged to the Sacramento River is Iron Mountain Mine, located nine miles northwest of Redding. This EPA Superfund site is the largest discharger of toxic heavy metals (principally copper, zinc, and cadmium) to surface waters of the entire United States. After several years of study and some disputes among the responsible parties, the EPA has selected a neutralization treatment plant as the interim cleanup strategy to control acid mine runoff from the site. The treatment plant is scheduled to begin operation in late 1993 and will virtually eliminate the existing threats to the Sacramento River fishery and Redding municipal water supply. After the 1993 water year, massive dilution releases from Shasta Dam will no longer be needed to prevent major fish kills during uncontrolled spills of toxic mine drainage. This approach will buy time to devise and implement a permanent cleanup program.

Urban Runoff

Storm runoff from urban areas is a significant point source of heavy metals and several organic pollutants, including petroleum hydrocarbons.(2) In 1975, levels of cadmium, chromium, copper, lead, and zinc were found in Sacramento area urban runoff at levels exceeding EPA criteria to protect freshwater aquatic life.(3)

Serious problems also exist with polynuclear aromatic hydrocarbons (PAHs), which are synthetic organic chemicals commonly found in urban runoff. They are the residue of asphalt wear, auto oil drippings, and illegal disposal of used crankcase oil. In 1985, high levels of PAHs were found in Sacramento area storm drains, and lower levels were found sixty miles downstream at Collinsville. Striped bass collected from the river at Collinsville in 1983 contained elevated levels of PAHs in their body tissue. The Regional Board has concluded that "...the Sacramento regional urban storm drain system is a major source of the PAHs found in the Sacramento River." However, little has apparently been done to reduce the hazardous levels of either heavy metals or PAHs in Sacramento area urban runoff.(4)

Sediment

Another major threat to the health of the Sacramento River aquatic ecosystem -- sediment loading -- is a direct result of land disturbance activities along the river and its tributaries. Among other effects, the eroded topspoil which washes into the river system destroys spawning habitat, burying gravels which could otherwise be used by reproducing trout and salmon. Additional efforts are needed to reduce sediment discharge from agriculture and subdivision developments.(6) Stream protection and rehabilitation projects are also needed to correct livestock grazing problems.

The largest forest fire in California in 1992, the Fountain Fire, destroyed over 80,000 acres of critical watershed in Eastern Shasta County. The bare slopes along Hatchet and Montgomery creeks may discharge large quantities of ash and sediment into the Pit River above Shasta Reservoir. Pit River trout and their spawning habitat are likely to be adversely affected. The Regional Board has been working with the California Department of Forestry to stabilize denuded slopes and control erosion resulting from the fire, which will have little if any direct impact on the Sacramento River.

Dioxin

The Regional Board has described levels of dioxin and furans in pulp and paper mill effluents currently being discharged to the Sacramento River as follows:

> Simpson Paper Company has achieved a significant reduction (approximately 98 percent) in the discharge rate of dioxins and related compounds in the last two years. In order to comply with existing waste discharge requirements and proposed State dioxin standards, Simpson has pursued chlorine usage reduction and elimination of dioxin precursors. The effect of these reductions has resulted in reduced concentrations in fish tissue of approximately 80-90 percent. The current health advisory on consumption of fish taken from the river between Redding and Red Bluff may soon be lifted.(6)

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Pesticides

The Regional Board continues to view herbicides and pesticides as a major source of Sacramento River pollution. However, while rice pesticides were once viewed as a major component of this problem, their levels in the City of Sacramento's water supply have decreased 99.5 percent over a recent 9-year period.(7) The California Rice Pesticide Management Program reduced total pesticide loads in the river attributable to rice production from 40,560 pounds in 1982 to 218 pounds in 1991. Herbicides, which are classified as a type of pesticide, are included in the above-quoted figures.

Warm Water

In 1988 the Regional Board found the U.S. Bureau of Reclamation in violation of adopted Sacramento River basin plan standards by releasing warm water from Shasta Reservoir.(8) During the period 1988 through 1992, millions of incubating chinook salmon eggs died each year from the release of water at Keswick Dam too warm to meet the required 56 degrees F. standard at downstream control points. Under Water Right Orders made by the State Water Quality Control Board (State Board) in 1990, 1991, and 1992, the Bureau has been required to meet, but has failed to meet, temperature requirements at various control points below Keswick. (9,10,11)

Temperature standards have not been met at Red Bluff Diversion Dam, the control point designated in the basin plan. This dam, 59 miles below Keswick Dam, is the downstream terminus of prime salmon spawning habitat that can be influenced by temperature control operations in the Central Valley Project's Shasta and Trinity divisions. Since the Bureau has run out of cold water by depleting the reservoir in 1988, 1990, 1991, and 1992, temperature control points have had to be temporarily moved upstream to Balls Ferry, 25.9 miles below Keswick, and Clear Creek, only 12.8 miles below Keswick. Still, even in these greatly reduced spawning areas, the Bureau has been unable to meet the temperature standards required for successful salmon egg incubation. In 1992, warm water releases from Shasta killed an estimated 18 percent of the endangered winter run, 21 percent of the commercially valuable fall run, and 52 percent of the imperiled spring run. A coalition of fishing and conservation groups sued the Bureau over its warm water releases in 1992, and was prepared to do so again in 1993 to enforce adopted Sacramento River temperature standards.

To insure that Sacramento River water temperature standards are met in 1993 and future years, at least 2.0 million acre feet of water must be held in Shasta Reservoir through September, and conservative criteria should be used in estimating available water supplies during the allocation process. (13,14,15,16) In addition, installation of temperature control devices at Shasta Dam and Whiskeytown Lake is essential for effective management of cold water reserves.

Cantara Toxic Spill

The massive 1991 herbicide spill into the upper Sacramento River occurred above Shasta Reservoir and is thus beyond the geographic scope of this report. While it eliminated all life from the 45 miles of river between the Southern Pacific Railroad's Cantara grade and Shasta Reservoir, the spill has never affected the Sacramento River below Shasta Dam. Before it was broken into harmless consituent parts, the toxic metam sodium was found in the upper four miles of the Sacramento River arm for a period of two weeks after it reached Shasta Reservoir.

CONCLUSION AND RECOMMENDATIONS

The Regional Board has described the Sacramento River as "still relatively clean for a major river in the U.S.," but also noted "significant water quality problems", as described in this brief report.(17) Following are recommendations addressing these problems. Many of them were made in the State Board's final report on their Sacramento River Toxic Risk Assessment Project (SRTRAP).(18)

Heavy Metals

1. The water quality criteria for copper, cadmium and zinc included in the SRTRAP final report should be considered by the Regional Board in developing water quality objectives for the protection of aquatic life and in implementing controls to reduce the discharge of these chemicals to the river below Hamilton City.

2. The U.S. EPA should take all necessary steps to keep on schedule with construction of the treatment plant selected to reduce the risk of release of uncontrolled spills from the Iron Mountain Mine Superfund site into the Sacramento River at Keswick Reservoir.

3. The Regional Board should continue to take action where necessary in the Redding/Shasta Lake region to control the flow of heavy metal trace elements from sources other than Iron Mountain Mine into the Sacramento River system.

4. The Regional and State boards should work with the U.S. EPA, State Departments of Health Services and Fish and Game, and other agencies to obtain chronic toxicity data on copper, cadmium, and zinc that are needed to (a) fully evaluate the sensitivity of resident species under local water conditions and (b) more fully evaluate the toxicity of ambient waters.

5. The Regional Board should continue to work with NPDES dischargers to lower analytical detection levels for trace metals.

Urban Runoff

6. The Regional Board should continue to work with local agencies in Sacramento and other urban areas to monitor synthetic organics from storm drain runoff and NPDES permitted facilities where applicable.

7. The Regional Board should continue to work with the City and County of Sacramento to reduce and eventually eliminate the deleterious effects of urban runoff on water quality in the Sacramento River and its tributaries.

8. The Regional Board should expand its consideration of the deleterious effects of urban runoff to other metropolitan areas likely to affect water quality in the Sacramento River system.

Sediment

9. The Regional Board and other responsible agencies should continue to monitor and recommend improvements in stream protection and implement rehabilitation projects to correct problems caused by logging and livestock grazing in the Sacramento River watershed.

10. The Regional Board should expand its work with the State Department of Fish and Game and other state and local agencies to reduce sediment discharge from agriculture and subdivision developments.

Dioxin

11. The Regional Board should continue to monitor the dioxin content of pulp and paper mill effluent to insure that levels in the Sacramento River continue to meet state and federal safety criteria.

Pesticides

12. The Regional Board should require agricultural practices that result in reduced mass loading of chemicals used on all crops grown in the Sacramento River system. Reductions should be comparable to those achieved through improved management practices on rice chemicals.

Warm Water

13. The Regional Board should seek to reinstate Waste Discharge Requirement 88-043 in order to properly implement maintenance of the Sacramento River basin plan temperature standard of 56°F or less at Red Bluff Diversion Dam from April 15 through the end of November.

14. The U.S. Bureau of Reclamation should implement for the 1993 water year the new federal law to "reevaluate existing criteria in order to maintain minimum carryover storage at Sacramento and Trinity River reservoirs to protect and restore the anadromous fish of the Sacramento and Trinity Rivers..." (19)

15. The U.S. Bureau of Reclamation should "use a 95-percent probability of exceedance forecast in setting its February 15 water delivery commitments. Subsequent updates of water delivery commitments (should) be based on a 99-percent probability of exceedance forecast. (20)

General Recommendations

16. The Regional Board should continue to work with both point source (NPDES permitted) and non-point source dischargers (i.e., the agricultural industry) to increase whole effluent and ambient receiving water toxicity testing.

17. Use of sensitive monitoring techniques such as resin column concentrating methods, in-situ bivalve monitoring, and the EPA three species bioassay should be expanded to obtain information on biologically significant levels of toxic substances in the Sacramento River system.

18. The State and Regional boards should expand the baseline monitoring program providing data necessary to assess the effects of point and non-point sources of toxic substances.

19. The State Board Tissue Substances Monitoring Program, the primary source of data on tissue residue levels of toxic substances in biota of the Sacramento River system, should continue to sample biota from the system, and should consider the need to expand the program.

Status Reports

20. Every three years, the State Board should produce follow-up reports on its Sacramento River Toxic Chemical Risk Assessment Project detailing progress made on the recommended actions listed above.

21. The first of these status reports on Sacramento River toxics should be released to the public by the State Board within one year of publication of this report.

22. A follow-up to this report should be produced by an independent entity by mid-1993, after release of the Regional Board's final report on its multi-year, 3-species biotoxicity testing program, conducted in many locations between Redding and Collinsville.

REFERENCES

(1) State Water Resources Control Board (SWRCB), *Sacramento River Toxic Chemical Risk Assessment Project, Final Project Report*, 90-11WQ, with Appendices, State of California, Sacramento, October, 1990.

(2) U.S. EPA, *Results of the nationwide urban runoff program, Final Report*, vol. I, Washington, D.C., 1983.

(3) Sacramento Regional County Sanitation District (SRCSD) and Sacramento Area Consultants, *Stormwater Control System Project Report and Draft EIR*, Sacramento Regional Wastewater Management Program, Sacramento, August, 1975.

(4) SRCSD, Ibid., p. I-43.

(5) Central Valley Regional Water Quality Control Board (CVRWQCB), *Major Pollutant Discharges into the Upper Sacramento River*, State of California, Redding, October, 1992.

(6) CVRWQCB, Ibid., p. 2.

(7) California Environmental Protection Agency, "Rice pesticides virtually eliminated from Sacramento drinking water supply", CAL EPA Press Release, Sacramento, February 26, 1982.

(8) CVRWQCB, Waste Discharge Requirement 88-043, State of California, Redding, 1988.

(9) SWRCB, Water Right Order 90-05, State of California, Sacramento, May 2, 1990.

(10) SWRCB, Water Right Order 91-01, State of California, Sacramento, January 10, 1991.

(11) SWRCB, Water Right Order 92-02, State of Calif., Sacramento, 1992.

(12) Sacramento River Council, "Bureau facing another salmon protection lawsuit", Press Release, Redding, December 21, 1992.

(13) Hydrosphere Resource Consultants, *Evaluation of Economic Impacts of Alternatives for Designation of Winter-Run Chinook Salmon Critical Habitat in the Sacramento River*, Boulder, Colorado, July 31, 1991.

(14) California Department of Fish and Game, *Water Quality and Water Quantity Needs for Chinook Salmon Production in the Upper (sic) Sacramento River*, page 9, Exhibit No. 14, Prepared for the 1992 Hearing Process on the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, Sacramento, 1992.

(15) Balance Hydrologics, *Effects of Shasta Lake Carryover Storage and Annual Releases on Meeting Sacramento River Temperature Objectives: Initial Studies*, Draft Report Prepared for the Sacramento River Council, Berkeley, February, 1993.

(16) SWRCB, *Draft Water Right Decision 1630, San Francisco Bay/ Sacramento-San Joaquin Delta Estuary*, December, 1992.

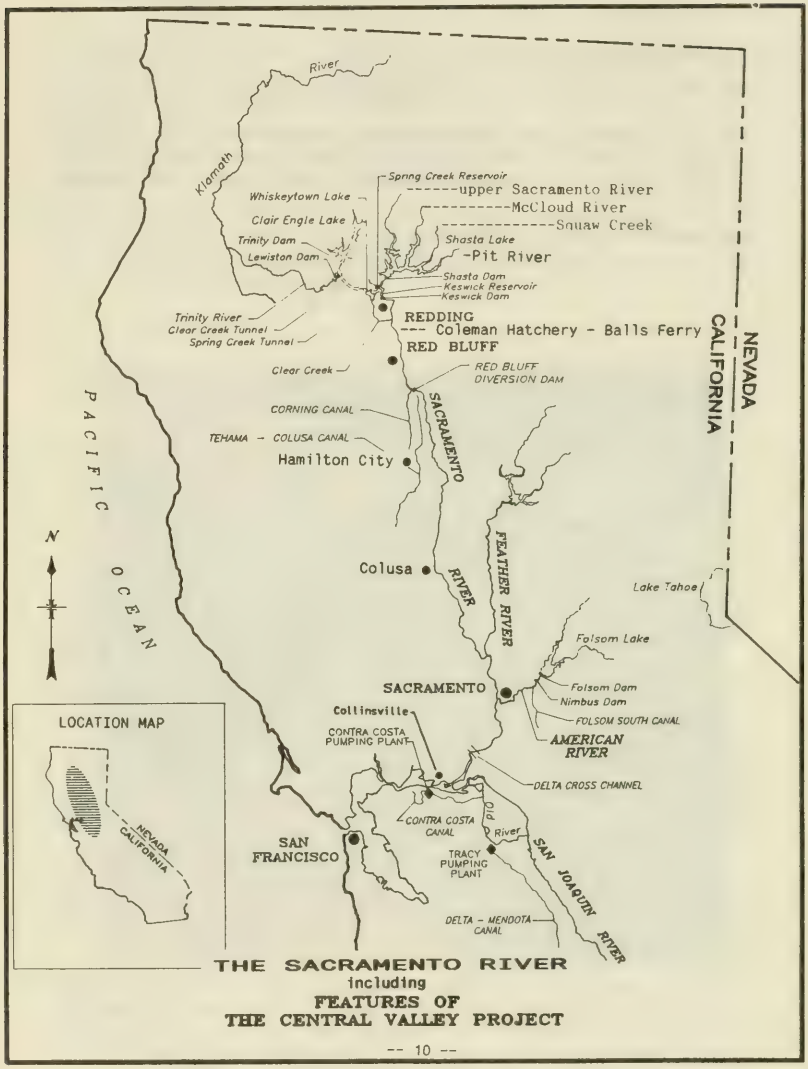
(17) CVRWQCB, op. cit., p. 3.

(18) SWRCB - 90-11-WQ, op. cit., pages xvii and xviii.

(19) U.S. Congress, *Reclamation Projects Authorization and Adjustment Act of 1992 (P.L. 102-575)*, Title XXXIV (Central Valley Project Improvement Act), Section 3406(b)(19) Washington, D.C., October 30, 1992.

(20) SWRCB - D-1630, op. cit., page 67.

Map 1 : from *CVP Operations Criteria & Plan*, U.S. Bureau of Reclamation, 1992



THE SACRAMENTO RIVER
including
FEATURES OF
THE CENTRAL VALLEY PROJECT

-- 10 --

TABLE 1
PERMIT REQUIREMENTS SUMMARIZED BY EFFLUENT TYPE

Effluent type	Total Permits	NUMBER OF PERMITS WITH REQUIREMENT											
		Flow	BOD	DO	pH	Temp.	Tur.	Set. Mat.	Susp. Mat.	Total Coliform	Res. Cl	EC	COD
Sewage/Wastewater Treatment Plant	(36)	36	35	30	36	17	10	36	36	36	34	27	1
		Toxicity: Bioassay (14), TDS (11), standard minerals (9), oil & grease (3), MBAS (2), water supply (2), chloride (2), heavy metals (3), NH4-N (3), priority pollutants (1), cyanide (1), groundwater monitoring (2), river dilution (2), N (1), PCBs in sludge (1)											
Plant Cooling Water	(14)	11	3	7	14	13	3	4	8	0	0	11	7
		Toxicity: oil & grease (4), heavy metals (2), TDS (2), water supply monitoring (2), volatile organics (3), bioassay (1), TOC (1), minerals (1), phenol (1), cyanide (1), nitrogen (1), priority pollutants (1), groundwater monitoring (1)											
Fish Hatcheries Waste	(10)	10	0	4	9	3	4	10	6	0	2	0	0
		Toxicity: daily log of chemical useage (8), chloroform (1)											
Logdeck Runoff (winter only)	(9)	1	0	1	8	0	8	7	7	0	0	0	3
		Toxicity: bioassay (6), tannins & lignins (7), TDS (1), oil & grease (1), PCP (1)											
Stormwater Discharge (winter only)	(6)	2	1	3	6	4	5	2	5	1	1	4	4
		Toxicity: oil & grease (3), groundwater monitoring (2), TDS (2), volatile organics (2), heavy metals (2), cyanide (2), bioassay (1), tannins & lignins (1), TOC (1), phenol (1), minerals (1), priority pollutants (1)											
Water Treatment Plant	(4)	4	0	0	4	0	4	4	1	0	1	0	0
		Toxicity: river flow (1), chromium (1), aluminum (1)											
Food Processing Wastes	(4)	4	3	2	4	3	0	3	3	1	0	2	1
		Toxicity: groundwater monitoring (1), soil sampling (1)											
Pulp Paper Process Waste	(2)	2	2	2	2	2	2	2	2	1	0	1	0
		Toxicity: mercaptans (1), resin acids (1), sulfate soaps (1), nitrogen (1), total P (1), color (1), bioassay (1)											
Industrial Yard Stormwater Runoff (winter only)	(2)	2	0	0	2	0	0	0	0	0	0	0	1
		Toxicity: oil & grease (2)											
Treated Industrial Steam Cleaning Waste	(2)	2	0	0	0	0	0	0	0	0	0		
		Toxicity: heavy metals (1), groundwater monitoring (1)											
Treated Ground Water	(1)	1	0	1	1	1	1	0	1	0	0	1	0
		Toxicity: acetone, methyl ethyl ketone, methyl isobutal ketone, heavy metals, cyanide, aldrin, phenol, bioassay, volatile organics, priority pollutants											

Total permits: 86. Total permits in table: 89 (three contain more than one type of effluent).

Updated through 31 December 1987.

Discharge values listed are design flows, and may be greater than average flows.

w: winter flow only

ABBREVIATIONS

* Effluent type:
FHW- Fish Hatchery Waste
FPW- Food Processing Waste
IYS- Industrial Yard Storm Runoff
LDR- Logdeck Runoff
PCW- Plant Cooling Water
PPW- Pulp Paper Process Waste
STP/WWTP- Sewage/Wastewater Treatment Plant
SWD- Storm Water Discharge
TIS- Treated Industrial Steam Cleaning Waste
TGW- Treated Ground Water
WTP- Water Treatment Plant

* Permit abbreviations:
D: measured daily
W: measured weekly
M: measured monthly
Q: measured quarterly
E: measured for each event
2xW, etc: measured twice a week
C: monitored continuously
AR: measured as required

BOD: biological oxygen demand
DO: dissolved oxygen
Temp: temperature
Tur: turbidity
Set Mat: settlable matter
Susp Mat: suspended matter
Res chlorine: residual chlorine
EC: electrical conductivity
COD: chemical oxygen demand
TDS: total dissolved solids

from Tables 1-3 and B-1, State Water Resources Control Board, *Sacramento River Toxic Chemical Risk Assessment Project, Final Project Report*, 90-11-WQ, with Appendices, State of California, Sacramento, October, 1990

TABLE 2
DILUTION OF NPDES/WDR POINT SOURCE DISCHARGES INTO THE SACRAMENTO RIVER.

River Segment Discharger (effluent)	Average Flow, ac-ft/day	Dilution Factor Sept-Oct 1976 (low flow)	Sept-Oct 1979 (medium flow)	Sept-Oct 1982 (high flow)	Toxic Chemical Monitoring
I. Shasta Dam to Bend Bridge					
City of Redding (STP/WWTP)	27.0	425 :1	438 :1	670 :1	King salmon bioassay
Simpson Paper Company (PPW)	45.6	252 :1	260 :1	396 :1	Bioassay, mercaptans, resin
Darrah Springs Fish Hatchery (FHW)	81.9	140 :1	144 :1	221 :1	Daily log of chemical use
Coleman Fish Hatchery (FHW)	205.6	56 :1	58 :1	88 :1	None
II. Bend Bridge to Hamilton City					
Mt. Lassen Trout Farm (FHW)	8.3	1157 :1	2040 :1	2056 :1	Daily log of chemical use
Packaging Company of Ca (PPW)	11.0	873 :1	1539 :1	1551 :1	% survival of salmon eggs
III. Hamilton City to Colusa					
City of Chico (STP/WWTP)	15.3	662 :1	677 :1	1163 :1	96-hour bioassay
IV. Colusa to Verona					
Sewerage Comm. Oroville (STP/WWTP)	19.9	968 :1	1116 :1	1835 :1	96-hour bioassay
Yuba City Water Rec Plant (STP/WWTP	21.5	896 :1	1032 :1	1698 :1	96-hour bioassay
NEC Electronics (PCW)	2.3	8379 :1	9649 :1	15873 :1	Toxic organics, etc
V. Verona to Freeport					
City of Roseville (STP/WWTP)	55.2	369 :1	487 :1	790 :1	96 organics, bioassay, etc
Aerojet General Corp (SWD)	147.3	139 :1	183 :1	238 :1	96 organics, 17 metals, etc
State Heating Plant (PCW)	24.1	849 :1	1116 :1	1810 :1	Iron
Sacramento Regional WWTP (STP/WWTP)	552.4	37 :1	49 :1	80 :1	Bioassay, standard minerals
Proctor & Gamble (PCW)	19.9	1018 :1	1344 :1	2192 :1	None

Notes: 1 acre-foot/day = 0.325851 million gallons/day (MGD)
Dilution factor = river flow/discharge flow
River flows taken at the bottom of each river segment.

from Table 1-4, State Water Resources Control Board, *Sacramento River Toxic Chemical Risk Assessment Project, Final Project Report*, 90-11-WQ. with Appendices, State of California, Sacramento, October, 1990

Testimony of Elizabeth Bowen, M.D., President Physicians for Social Responsibility

Good morning. Mr. Chairman and members of the Committee, I am Dr. Elizabeth Bowen, President of Physicians for Social Responsibility and Assistant Professor of Family Medicine at the Morehouse School of Medicine in Atlanta, Georgia. I am very pleased to be here today to share with you a medical perspective on Superfund as you consider its reauthorization.

Physicians for Social Responsibility (PSR) is a national membership organization of over 20,000 physicians, health professionals, and supporters with 100 chapters in local communities across the United States. As the America affiliate of the IPPNW, winner of the 1985 Nobel Prize for Peace, PSR has long been concerned with national and global security questions, especially in the areas of arms control and the environment. Raising concerns about human health in the context of the Cold War was frankly not always easy or popular. Too often the imperatives of national security overcame concerns about human health and the environment.

Today, with the Cold War over, may of us hope that some of the resources that were marshalled for the Cold War will be called upon to promote the equally critical task of human health and environmental protection. It does appear, however, just as the opportunity to improve our environmental standards and take great strides in promoting environmental health is upon us, the need for environmental regulation itself is being questioned in some quarters. In a post-Cold War world, we hear more and more about fiscal constraints and cost-benefit ratios narrowly construed. We hear less and less about the tremendous benefits of improved health and environmental quality for our citizens. One need look only as far as the pages of *The New York Times* to see reported the views, especially of those in industry, that the effort to protect human health just may not be worth it after all.

A WORLD WITHOUT SUPERFUND

As you begin your deliberations on Superfund reauthorization, I would like to sketch briefly for you from our experience at PSR and from my own observations what a world without Superfund, indeed without environmental regulation itself, might look like. I want to tell you about two of the most polluted places on earth, places where PSR has ongoing environmental and health projects. I want you to keep alive in your mind's eye two cities—Katowice, Poland and Chelyabinsk, Russia.

Recently, along with a team of physician colleagues, I visited the Silesian Medical Academy in Katowice in Upper Silesia, Poland. The purpose of my visit was to carry out, under PSR auspices, a training and education program for Polish doctors to deal with lead poisoning and other pollution problems caused by unregulated industrial production. Human exposure there—particularly of high-risk populations—to dangerous substances is greater than in other Polish industrial areas because of the proximity of housing, schools, hospitals, and nurseries to power plants, factories, coal heaps and roadways.

Almost 20 percent of the area's tilled land should not be farmed due to dangerous levels of heavy metals and aromatic hydrocarbons. Another 32 percent of agricultural areas suffer from lowered fertility due to soil contamination. Two-thirds of the waterways are contaminated with saline and radioactive elements from coal mines and seepage from industrial pollutants and municipal waste dumps.

This environmental degradation directly affects public health. Upper Silesia's life expectancy is the shortest in Poland. Infant mortality as well as premature births, genetic defects, and spontaneous miscarriages are among the highest in the country. More than 60 percent of children exposed to pollutants from non-ferrous smelting plants have low body weights and heights. In some areas, 35 percent of the children suffer from chronic bronchitis. And most importantly, children throughout the region are exposed to lead—with lead poisoning the region's most pressing environmental health problem.

I wish today I could share photographs with you of that nightmarish landscape of environmental disaster and the children who suffer from living in it. In fact, my colleague Robert Ryder, M.D. who accompanied us to Poland estimates in a article in our medical journal *The PSR Quarterly* that as many as 70 percent of children in various parts of the region are affected. Children, whose hematopoietic and nervous systems are particularly sensitive, suffer a number of deleterious effects from lead, among them: learning and reading disabilities, reduced performance as measured on standard tests of intelligence and childhood behavioral disorders. All of these adverse health effects have been recognized by the medical community to occur at progressively lower levels of exposure; all may be related to serious behavioral and other disorders in later life.

That is why programs like Superfund and lead abatement efforts are so important. In fact, preventing and treating childhood lead exposure will be well worth it in human and economic terms as a recent CDC study indicates by estimating the savings from health care costs through the prevention of childhood lead poisoning.

Similarly, in Chelyabinsk, Russia where PSR doctors carry out physicians' exchanges through our Hanford, WA-Chelyabinsk Project, one can see the results of totally unregulated nuclear weapons production, carried out in total secrecy by the Soviet Union, that far surpass anything the United States has experienced.

David Rush, M.D., of our Physicians' Task Force, among others, observed first hand the results of unrestricted dumping from nuclear weapons production and of a tank explosion of radioactive wastes from the Kyshtym accident in 1957. The health effects of these events were first reported by the Russia physician Mira Kossenko and her colleagues in the December, 1992 *PSR Quarterly*. Radioactive wastes from the secret nuclear production at Chelyabinsk were initially dumped in the early 1950's directly into the Techa River where 28,000 people lived in villages spread out over 237 kilometers downstream. Eventually many of the residents were relocated and a tank storage system instituted. That storage system resulted, however, in the 1957 Kyshtym explosion. Although a number of reviewer's believe that Dr. Kossenko's studies seriously understate the effects of radioactive exposures, her work reveals, at a minimum, a statistically confirmed increase in the incidence of leukemia occurring from 5 to 20 years after the beginning of irradiation, with leukemias consisting of both acute and chronic granulocytic types.

It is, in fact, environmental regulation and law in the United States that has protected human health and the environment far better than the unregulated disasters we have witnessed in Poland and Russia. Mr. Chairman, I have seen a world without environmental regulation or Superfund clean-up programs, and it does not work.

We have much to be proud of in terms of environmental protection in the United States and we surely must not go backwards. Neither can we rest on our laurels. There are areas in our own nation, especially, as has been well documented, where disproportionate numbers of the poor and racial minorities live, that risk—without immediate and continued attention from Superfund and other programs—becoming post-Cold War nightmares of our own.

SUPERFUND SITES AT FEDERAL FACILITIES

PSR has been involved for a number of years in independently reviewing and assessing Federal facilities, especially the Department of Energy's nuclear weapons production complex, and more recently, Department of Defense facilities polluted by military toxins.

There are over 100 Superfund sites at these facilities. In the past year, PSR published a study titled *Dead Reckoning* that reviewed 124 epidemiological studies carried out at nuclear weapons facilities. That report concluded that "the findings of DOE-sponsored studies offer no Fran basis for the repeatedly expressed official position that the health of workers and the public has been fully protected and that there are no excess risks of disease and death in the nuclear worker cohorts. Statistically significant excess deaths from a wide variety of cancers have been found at major sites in the nuclear weapons complex."

In plainer language, there are clear indications that there are health risks to workers at DOE sites and indications that off-site populations may be at risk as well. Clearly, further independent study to assess these risks and to guide environmental restoration is needed. The recent tank explosion at the Tomsk-7 nuclear weapons site in Russia again should stand as a stark warning of what could happen at our own tank farms at the Hanford Reservation.

Similarly, the Office of Technology Assessment in its 1991 review *Complex Clean-up* concluded that "the assertion that contamination represents 'no immediate threat' and no 'near-term risk' is largely unsubstantiated. It is also somewhat misleading."

What does this mean in human terms? It is clear that workers and residents in and around the Superfund sites with which we are most familiar are exposed to health risks related to radioactive and toxic substances. Assessing these risks is complicated, difficult, and at times inconclusive. Environmental epidemiology is not an exact science. But to date, not enough of it has been carried out. In the meantime, can we conclude that no one is getting sick, or that we can simply do nothing?

My colleague, Gregg Wilkinson, M.D., and other epidemiologists, for example, have shown through a process called meta-analysis of separate studies at Hanford, WA, Oak Ridge, TN, Rocky Flats, CO, and Portsmouth Navy Yard, NH, that there is "evidence of a modest excess of leukemia from exposure to very low doses of ioniz-

ing radiation at low rates." Other studies have indicated elevated relative risk of brain cancer among workers at DOE sites, as well as multiple myeloma and other cancers and tumors. Take one example that hits home for me as a woman, since most of these studies have been conducted with male subjects. A 1987 study by Wiggs found that ovarian, pancreatic and renal cancers were significantly elevated among 6,790 female workers at Los AIamos National Laboratory (LANL). It is only because these workers were not well monitored that it is difficult to prove causation.

Or, consider the cases observed and discussed by William Reid, M.D., an oncologist/hematologist at the Methodist Medical Center, the sole hospital in Oak Ridge, Tennessee. Dr. Reid has studied, reported on, and spoken publicly about illnesses related to exposure to mercury and other heavy metals, the toxic byproducts of the Y-12 plant involved in nuclear production at the Oak Ridge Reservation. More than a million pounds of mercury is unaccounted for, a large portion of which has been deposited in the sediment in the creek that runs through Oak Ridge and was used as fill for the local civic center. Additional amounts continue to escape from plant premises in the form of rainwater runoff. Nevertheless, a 1983 pilot Centers for Disease Control study concluded that there was no current exposure to mercury contamination, although the authors said their study results supported the fish ban in East Fork Poplar Creek. Bill Reid, however, has reported detectable mercury levels in his patients blood as well as a disproportionately large number of kidney cancers, early prostate cancer (in 45-year-old patients), and signs of immuno-suppression. Reid has also detected rare renal tumors in patients that may be related to other heavy metals.

Other doctors are confirming Reid's work and reporting increased bone marrow disorders, lymphomas, and immune suppression. But for calling attention to ongoing public health problems and challenging previous health studies, Dr. Reid has risked retribution from his superiors at the hospital.

What these and other cases tell us is that American citizens are getting sick as a result of hazardous substances at Superfund sites. The recent report of the National Research Council, *Environmental Epidemiology: Public Health and Hazardous Wastes* puts it in a rather measured way: "In spite of the complex limitations of epidemiologic studies of hazardous waste sites, several investigations at specific sites have documented a variety of symptoms of ill-health in exposed persons, including low-birth weight, cardiac anomalies, headache, fatigue and a constellation of neurobehavioral problems." The NRC report indicates at the same time that in many instances we do not know whether people are getting sick or whether their illnesses are caused by exposures from Superfund sites. We simply do not have sufficient data.

MEDICAL ETHICS—FIRST DO NO HARM

Here is the crux of a matter of critical national policy and of medical ethics. There is much we do not know about the public health impacts of hazardous waste-site exposures. Thus, it is tempting to conclude on the basis of limited or faulty information that any sort of remediation and environmental restoration called for under Superfund are simply not worth the cost. I am often reminded of Henrik Ibsen's great play, *An Enemy of the People*, where the politically naive mayor decides to alert the townsfolk that the waters of the spa on which their tourism revenue depends are polluted. The mayor is driven from office and the town's tourism, at least for a time, is saved. Ibsen sees it as tragedy.

As physicians, we subscribe to the ancient dictum, "first do no harm." When there is doubt and scientific uncertainty, we must side with the patient. Physicians are also trained, as part of the medical ethic, to act, to save lives, even when full information is not available. We know that toxic substances harm humans, that they enter the ecosystem and humans through a variety of media, that Superfund sites are a source of such toxins, and that there is considerable medical, scientific, and anecdotal evidence that various populations are or may be at risk.

I urge you in planning wise public policy to give the benefit of doubt to human health, to our fellow citizens, not to chemicals.

ENVIRONMENTAL JUSTICE FOR THE MOST VULNERABLE

As you deliberate, also keep in mind that those who suffer from exposure to toxic substances are the most vulnerable in our society—the young and old, the poor, and racial minorities. One in four children in the U.S. are poor. More than half of minority children are poor. They begin life at risk, and the risks accumulate with age.

An estimated two-thirds of toxin production and disposal is located in minority communities as is increasingly documented since the pioneering United Church of Christ study. Let us focus a moment just on toxic metals. An estimated ten million children suffer from lead toxicity. They are highly vulnerable due to poverty and geography. Some 2.25 million children are also seriously malnourished, and thus are exquisitely vulnerable to environmental insults by toxic metals. For instance, a child deficient in protein, calcium, iron, or zinc will absord more lead than a well-nourished child with identical exposure. Lead affects the brain and decreases children's ability to learn. While lead toxicity is not restricted to the poor, nor to children, they bear the brunt of it. More than half of the affected children are African-American.

Unfortunately, lead is only the tip of the iceberg. An EPA survey found that of some 950 industrial waste sites, 60 percent contained large quantities of lead. 25 percent contained significant amounts of copper, cadmium, and arsenic, and 10 percent contained mercury. What are the effects of these other metals on health?

For 2 years in New Haven, Connecticut I conducted clinical nutrition research in a poor urban area. It was not surprising to find cases of lead toxicity. But as a result of the research protocol, we also found scores of patients with elevated copper, arsenic, cadmium and mercury.

In 1988, the *American Journal of Epidemiology* reported that individuals with chronically elevated serum copper levels had adjusted death rates four times higher than normal. Excess serum copper is associated with increased risk of death due to cardiovascular disease and several forms of cancer, including carcinomas of the breast, lung, colon, cervix, bladder, and liver.

Cadmium is another toxic metal found in approximately 25 percent of industrial waste sites analyzed by the EPA. Cadmium accumulates throughout life, as does lead. It concentrates in the kidneys, arteries, and liver. In the liver, the ratio of zinc to cadmium should be high. One study of 400 autopsies found that the zinc/cadmium ratio was four times higher in rural Africans than in urban African-Americans. The study noted that cadmium may be one key to the widespread problem of hypertension among African-Americans.

Arsenic is also found in 25 percent of U.S. toxic waste sites. More than 500 cases of arsenic toxicity are reported yearly. Certain paints, ceramics, and alloys of copper, brass, and bronze contain arsenic that may be ingested via food or water in contact with them.

That exposure to toxins is greatest in minority communities is well established. What is needed is more research on the specific health impacts of hazardous wastes on the health of minority communities. Thus, we support efforts such as the Agency for Toxic Substances and Disease Registry's new Minority Health Initiative Committee and research efforts in the area of environmental health in minority communities supported by the National Institute of Environmental Health Sciences and the Office of Minority Programs of the National Institutes of Health.

What is at stake, Mr. Chairman, is not simply an expensive engineering program as the recent *Times* series and others would have it. At stake is the future of ecosystems of which we must constantly remember human beings are a part. And further, we must remember that those humans are our neighbors and our children, the strength and future of this great nation. I would like to suggest some broad guidelines for action for your committee to consider, actions that will help the most vulnerable in our society and prevent Katowices and Chelyabinsks and Tomsk-7s in the United States.

GUIDELINES FOR ENVIRONMENTAL HEALTH THROUGH SUPERFUND

Recommendation. There should be an independent, well-funded ATSDR with centralized and coordinated health assessments and data.

Given scarce resources, ATSDR should become the agency for centralized and coordinated health assessment and data. Given the multiple environmental assaults from a variety of media citizens are exposed to, we need the ability to better carry out and keep track of risk assessments. We should also remove DOE and DoD funding from the process since in our experience polluters are not good at policing themselves.

In the area of energy-related epidemiologic research alone on the DOE complex, medical surveillance, health assessments, exposure registries, dose-reconstruction studies and full-scale epidemiology studies are being conducted by an array of state and federal health agencies. These include: the DOE and its Office of Environment, Safety and Health, Office of Defense Programs, and Office of Environmental Restoration and Waste Management; HHS and its daughter agencies, the Centers for Dis-

ease Control, the National Institute of Occupational Safety and Health, the Center for Environmental Health and Injury Control, and the Agency for Toxic Substances and Disease Registry; and seven health departments.

Such overlap of research roles and tasks is needlessly duplicative, wasteful of scarce resources, and does not lead to optimal results.

Recommendation. There should be independent review, oversight, and improved public involvement in health assessment.

ATSDR was given a task that has proved to be enormous and complicated. With due respect to my fellow Atlantan, Dr. Barry Johnson, largely due to inadequate funding, and an unclear mandate, ATSDR has not always been able to carry out its mission well. Too often, community involvement has been inadequate and ATSDR teams that assess sites have not been thorough enough, nor are there mechanisms for proper follow up.

Independent review, we have found is vital to assuring that agencies are held accountable and community involvement is critical to gathering sufficient data and meeting the concerns of those directly affected. Keep in mind, again, that as doctors we understand that our patients are key sources of information and that they deserve our trust and concern. ATSDR's role could also be improved by expanding contracting to independent hospitals and non-profit organizations and by providing technical assistance grants to communities, especially those in "hot spots," so they can hire their own health advisers.

In general, communities and stakeholders must be fully involved in the process of assessment, priority setting and cleanup. Again, given our experience with Federal facilities, I would call to your attention and approve the broad conclusions of the Keystone Report or, in bureaucratese, the *Interim Report of The Federal Facilities Environmental Restoration Dialogue Committee.* The FFER established by EPA consists of forty representatives of federal agencies, tribal and state governments and associations, and local and national environmental, community and labor organizations reached consensus on a number of detailed policy recommendations which broadly stated are:

- Improve the dissemination of FFER related information
- Improve stakeholder involvement in key FFER decisions, with special emphasis on site-specific advisory boards.
- Improve consultation of FFER funding decisions and priorities setting in the event of funding shortfalls.

Recommendation. More health research should be funded, especially in the area of non-cancer diseases.

PSR has been involved in a Great Lakes Project with the International Joint Commission and other organizations to survey and educate physicians about the adverse impact of environmental agents on health—including on reproductive, and fetal and early human development. Reproductive and developmental health problems can be relatively subtle and hard to document, but any threat to human reproduction and healthy, normal development demands attention.

We support the research the National Institutes of Health have devoted to the impact of environmental estrogens and other agents on a variety of diseases including endometriosis, endometrial cancer, breast cancer, bone development, miscarriages, unexplained infertility, birth defects and other reproductive problems.

Recommendation. Improve data collection and dissemination concerning public health questions related to Superfund sites.

In general, we support the conclusions of the NRC study *Environmental Epidemiology* that call for filling data gaps about health effects by making public health assessments an early priority in the routine evaluation of hazardous waste disposal sites. We also need adequate support for state and local health department investigations, better measurements or estimates of human exposure from a variety of sources, and increased use of disease registries and vital statistics systems.

Recommendation. Fund greater physician environmental health issues training and education both governmental and private.

Our surveys and work in the Great Lakes indicates a serious lack of knowledge and training on the part of physicians about environmental health and the role of toxins in general. We commissioned a professional survey of physicians in the Great Lakes region that revealed that physicians surveyed knew little about the sources or health effects of such toxins. 58 percent did not know the health effects of PCBs; half did not know the effects of mercury. Very few physicians surveyed had ever tested patients for mercury or PCBs.

In addition to regulation, we need a broadly educated medical community and public concerning environmental health. ATSDR cannot possibly carry out such a mission alone. There need to be mechanisms for establishing broad physician and community education programs so that family doctors and other practitioners are able to effectively monitor patients and provide information on environmental health.

CONCLUSION

Mr. Chairman, in conclusion I would like to say that we live in a great democracy and it has been a privilege to testify here today. As citizens in a democracy, we bring broad principles to the question of how government relates to its citizens. We have concern for the individual, for openness, for accountability. As physicians, we are concerned first with the health and welfare of Americans. You and I are called upon in our professions to serve the people, not the other way around. First, we must do no harm. These fundamental principles were not followed in Katowice or in Chelyabinsk. The horrifying results are now plain for all to see.

I urge you to reauthorize Superfund, to maintain its principles that polluters must pay, to expand and strengthen its mission of health assessment and community involvement, to improve medical and scientific research, to train and educate physicians in environmental health, and most of all, to protect the most vulnerable among us. My work at Morehouse, and with Physicians for Social Responsibility is dedicated to that end. I know you and the members of this committee share that concern. I wish you well in the great task that lies ahead of you. Thank you.

TESTIMONY BY BARRY L. JOHNSON, PH.D., ASSISTANT SURGEON GENERAL, ASSISTANT ADMINISTRATOR, AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY PUBLIC HEALTH SERVICE, U. S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Good morning. I am Barry Johnson, Ph.D., Assistant Administrator of the Agency for Toxic Substances and Disease Registry (ATSDR). I have served as Assistant Administrator since 1986, and I am a 30-year career public health officer and scientist. I welcome this opportunity to brief you on ATSDR's public health actions and findings under the Comprehensive Environmental Response, Compensation, and Liability Act, as amended (CERCLA, or Superfund). ATSDR is one of the 8 agencies that comprise the Public Health Service; we are the principal federal public health agency involved with hazardous waste issues. As such, we will provide the committee with what we, and others, have found about associations between human health and hazardous wastes and the prevention of adverse human health effects that result from exposure to such wastes. I must emphasize association does not necessarily mean causation.

As background, ATSDR was created by the CERCLA legislation in 1980. We draw our budget and principal authorities from CERCLA [§ 104 (i)]. Our understanding of Congressional intent in creating ATSDR was to establish a federal public health resource that would work with EPA and other federal agencies, the States, local governments, and the public, on health and science matters concerning the human health hazards associated with Superfund sites and emergencies resulting from the unplanned releases of hazardous substances. The 1980 CERCLA mandated ATSDR to: 1) establish a National Exposure and Disease registry, 2) create an inventory of health information on hazardous substances, 3) create a listing of areas closed or restricted to access, 4) provide medical assistance during public health emergencies, and 5) determine the relationship between human exposure to hazardous substances and illness.

The 1986 Superfund Amendments considerably expanded the Agency's responsibilities. We were mandated to conduct health assessments (i.e., ATSDR's Public Health Assessments) of all National Priorities List (NPL) sites and to respond to petitions from individuals seeking health assessments, with the added provision for follow-up health activities, as needed, such as health studies, health surveillance, and exposure registries. We were also given responsibility for ranking which hazardous substances posed the greatest human health hazard at NPL sites, preparing toxicological profiles for each of those substances, and determining key data gaps for each substance. Identified key data gaps are to be filled through directed research, coordinated with EPA. ATSDR was also tasked to develop educational materials for health professionals, primarily physicians, concerning the diagnosis and treatment of patients exposed to toxic substances.

In short, CERCLA, as amended, mandates of ATSDR a broad, national program of Superfund site health assessments, health investigations, surveillance and regis-

tries, applied research, emergency responding, health education, and toxicological database development.

What have ATSDR and others determined about the impact on public health of hazardous waste sites and emergencies from the unplanned releases of hazardous substances? The following statements capsulize our findings to date:

- Though epidemiologic findings are still unfolding, *when evaluated in aggregate* (i.e., by combining health data from many Superfund sites), proximity to hazardous waste sites seems associated with a small to moderate increased risk of some kinds of birth defects and, less well documented, some specific cancers.
- Although presenting great difficulty in study design to environmental epidemiologists, health investigations of communities around *some individual* hazardous waste sites have found increases in the risk of birth defects, neurotoxic disorders, leukemia, cardiovascular abnormalities, respiratory and sensory irritation, and dermatitis. However, no adverse health findings have been reported in many studies. These apparent discrepancies may be due to factors such as limitations inherent to epidemiologic methods, differences in environmental conditions in the communities investigated, and the small number of persons evaluated at some sites.
- Site remediation doesn't necessarily resolve all public health concerns. An increasing body of scientific evidence indicates past exposures to hazardous substances can cause latent adverse health effects. Recent findings from the ATSDR exposure registry of approximately 5,000 persons exposed in the past to trichloroethylene (TCE) in drinking water showed registrants reporting elevated rates of diabetes, stroke, elevated blood pressure, and neurologic problems. Followup research will attempt to determine to what extent these conditions are related to TCE.
- Human exposure to releases from hazardous waste sites has been documented at about 40 percent of sites; potential exposure could occur at another 40 percent. The actual levels of human exposure vary greatly from site to site and within groups at sites; each site is different. Measured levels of hazardous substances range from quite low to levels of health concern. ATSDR has found elevated exposure levels for lead, PCBs, arsenic, cadmium, chlordane, mercury, and a herbicide in persons at 12 sites.
- About 2 percent of sites present an Imminent and Urgent Public Health Hazard. (Such sites have been referred to EPA in accordance with normal procedure for actions under its emergency removal authority. Since 1989, ATSDR has issued 11 major health advisories on sites that were considered as imminent and urgent threats to public health.) ATSDR classifies 35 percent of sites as being Public Health Hazards, 40 percent as Indeterminate (these are sites where key environmental data are lacking to adequately determine if persons are being exposed), 20 percent as No Apparent Public Health Hazard (these are sites where past and current exposures have been indicated but where, based on current data, those exposures are no longer of public health concern), and 2 percent as No Public Health Hazard.
- Enough environmental data are available to support health investigations in communities living near 35 percent of the sites evaluated by public health assessments. There is insufficient environmental data to determine if health investigations should be conducted at approximately 40 percent of the sites which have had health assessments.
- The National Research Council, using EPA data, estimates about 41,000,000 people reside within 4-mile radii of 1,134 NPL sites, and about 3,325 persons reside, on the average, within 1 mile-radii of NPL sites.
- According to data collected for ATSDR since 1985 by the National Governors' Association, the number of areas closed to the public or with restricted access has increased from 1,637 in 1985 to 2,302 in 1991.
- The public, particularly communities living around hazardous waste sites, continue to express concern for the health effects of hazardous substances released from waste sites and other sources. ATSDR has received 251 petitions for public health assessments of sites of concern to petitioners; 80 petitions are being received annually.
- A hundred or more different toxic chemicals can be found at a single waste site in widely varying combinations; such mixtures may be much more toxic than any of the individual chemicals. The top 10 specific contaminants of concern identified at sites with a completed exposure pathway (those categorized as urgent public health hazards or public health hazards) were: lead (79 percent of sites), trichloroethylene (TCE) (66 percent), benzene (64 percent), arsenic (60 percent), chromium (57 percent), cadmium (52 percent), tetrachloroethylene (PCE)

(49 percent), toluene (45 percent), di(2-ethylhexyl)phthalate (43 percent), and vinyl chloride (41.5 percent). The most common media in which those contaminants were identified were groundwater and soil.

- Serious gaps exist in scientific knowledge about the toxicity, bioavailability, exposure, and human health effects of individual hazardous substances and mixtures of substances released from Superfund sites and during emergency releases. ATSDR and EPA jointly identified 117 key data gaps for the first 38 top ranked hazardous substances found released from Superfund sites.
- Based on data from 5 state health departments, unplanned releases of hazardous substances from fixed and mobile sources present a health risk to workers (64 percent of injuries reported), emergency responders (14 percent), and community residents (22 percent).
- Physicians and other health care providers in communities around Superfund sites express the need for training and technical assistance in matters of hazardous substances.

Turning now to more detail on these points, perhaps the most pressing of the mandates given us dealt with conducting public health assessments at abandoned hazardous waste sites.

Public Health Assessments

Since 1986 the Agency has completed more than 1,500 public health assessments. The 1986 CERCLA amendments require ATSDR: a) to conduct, within 1 year, a public health assessment of every site placed, or proposed for placement, on the NPL, and b) to respond to petitions for health assessments from individuals. The NPL currently numbers 1,331 sites, including 98 Department of Defense sites and 18 Department of Energy sites. ATSDR's public health assessments are an evaluation of data and information on the release of hazardous substances into the environment to:

- assess any current or future impact on public health,
- develop health advisories or other health recommendations, and
- identify studies or actions needed to evaluate and mitigate or prevent adverse human health effects.

Public health assessments are ATSDR's principal device to identify those communities that require public health followups. Our public health assessments are conducted using environmental contamination data provided primarily by EPA; health outcome data (e.g., birth defects) are supplied, when available, by states; and ATSDR staff seek to identify community-based health concerns. Many of ATSDR's public health assessments are performed under cooperative agreements by state health departments. Currently, ATSDR funds 22 states (covering approximately 80 percent of all NPL sites) to draft public health assessments which are then reviewed and approved by Agency staff.

The Agency's public health assessments currently place sites within specific categories of public health concern. About 2 percent of sites present an Imminent and Urgent Public Health Hazard. (Such sites are referred to EPA for actions under its emergency removal authority. Since 1989, ATSDR has issued 11 major health advisories on sites that were considered as imminent and urgent threats to public health.) ATSDR classifies 35 percent of sites being Public Health Hazards, 40 percent as Indeterminate (these are sites where key environmental data are lacking to adequately determine if persons are being exposed), 20 percent as No Apparent Public Health Hazard (these are sites where past and current exposures have been indicated but where, based on current data, those exposures are no longer of public health concern), and 2 percent as No Public Health Hazard. Site ranking and site classification is not a precise science; as databases improve in quality, so will ranking and categorizations of sites.

ATSDR has integrated all the information from its 1,500 public health assessments into an integrated database, called HazDat. Using this database, ATSDR can draw a number of characteristics about Superfund NPL sites. An analysis of public health assessments conducted last year found that human exposure to hazardous substances occurred at about 40 percent of sites. These figures have remained consistent with health assessments conducted over the past 6 years.

ATSDR also has been able to make important observations about the types of contaminants released from Superfund sites; the environmental media that are most affected by those contaminants; and the pathways by which people are exposed to contaminants. The top three classes of contaminants of concern identified in the fiscal year 1992 public health assessments, and the frequency with which they occurred at sites, were:

- volatile organic compounds (solvents) (87 percent of sites),
- inorganic compounds (87 percent), and
- halogenated pesticides (50 percent).

The top 10 specific contaminants of concern identified at sites with a completed exposure pathway (i.e., those categorized as urgent public health hazards or public health hazards) were: lead (79 percent of sites), trichloroethylene (TCE) (66 percent), benzene (64 percent), arsenic (60 percent), chromium (57 percent), cadmium (52 percent), tetrachloroethylene (PCE) (49 percent), toluene (45 percent), di(2-ethylhexyl)phthalate (43 percent), and vinyl chloride (41.5 percent).

For the most part, these classes of contaminants were most frequently identified in groundwater, followed by subsurface soil, sediment, and surface water.

Using ATSDR's HazDat database, we have found that a hundred or more different toxic chemicals can be found at a single waste site. These chemicals can be found in widely varying combinations in water, soil, and air, and some of the combinations may be much more hazardous than any of the individual chemicals. Therefore, ATSDR is examining the combinations of chemicals that exist at waste sites to identify chemical mixtures that should be studied. As an example of what we have learned from this analysis, we have found that soil with levels of concern for copper, chromium, arsenic, cadmium or mercury almost always has lead in high levels too (more than 80 percent of the time). This kind of information is important for designing human epidemiological investigations.

The National Research Council, using EPA data, estimates about 41,000,000 people reside within 4-mile radii of 1,134 NPL sites, and about 3,325 persons reside, on the average, within 1 mile-radii of NPL sites. ATSDR is obtaining demographics data on the communities around NPL sites, and in 1994 will conclude an analysis of their ethnic and racial composition as part of the Agency's Minority Health Program.

ATSDR's public health assessments are reviewed by a multidisciplinary staff of physicians, epidemiologists, toxicologists, and engineers to determine what follow-up actions should be undertaken at individual Superfund sites. In fiscal year 1992, sufficient data were available to indicate the need for health investigations at about 35 percent of sites, including sites where concern was for current and/or past exposures to hazardous substances released from the sites. The health investigations consist of human exposure studies and health effects investigations. ATSDR is backlogged in conducting these health followups; approximately 15 percent of followups can currently be serviced each year.

As I mentioned, ATSDR can be petitioned by an individual to conduct a health assessment of a site of concern to the petitioner. The Agency has received 251 petitions to date, a large figure that shows the public's health concerns. An average of 80 petitions are received annually. We are currently accepting about 75 percent of petitions as requiring public health assessments or health consultations. About 55 percent of petitions come from individual or community groups; 8 percent from members of Congress. The large number of petitions received annually is a demanding workload on ATSDR; *to put these 80 into perspective, EPA added 23 sites to the NPL during 1991 and 30 in fiscal year 1992.*

Areas Closed or With Restricted Access

CERCLA [§ 104(i)(1)(C)] requires ATSDR "in cooperation with the States, and other agencies of the Federal Government, establish and maintain a complete listing of areas closed to the public or otherwise restricted in use because of toxic substance contamination." The National Governors' Association, under funding from ATSDR, has maintained the subject list. In 1985 there were 1,637 areas closed, which grew to 2,302 in 1991. The greatest number of areas closed or restricted to access occurred because of contamination of organic chemicals (73 percent of all areas). The bulk (78 percent) of sites closed or restricted are in states east of the Mississippi River. Data available to ATSDR do not indicate the reasons for the increased number of sites closed or restricted to access.

Health Effects Investigations

Another of our CERCLA mandates requires that we conduct studies of the adverse health effects of exposure to hazardous substances from waste sites. Epidemiological studies by ATSDR, state health departments, and academic institutions can be grouped into studies of a) the health of persons around individual sites and b) studies that combine populations around sites and their data for aggregate analysis.

Health investigations are important in a public health sense for identifying: persons for whom exposures must be interdicted and adverse health conditions that

should be brought to the attention of persons found at increased risk of adverse health effects and medical and health authorities.

Aggregated Site Studies

Investigating the broad picture of the association between hazardous waste sites and public health impact requires combining site populations with common environmental characteristics, thereby increasing the size of the human populations investigated. This aggregating of sites has been used as an investigative method by researchers who have examined the association of cancer and birth defects rates in areas around hazardous waste sites.

Two sets of investigators have reported an increased frequency of cancers in counties surrounding hazardous waste sites. A 1983 study reported that age-adjusted gastrointestinal (GI) cancer mortality rates (all sites combined) were higher in 20 of New Jersey's 21 counties than national rates. Within specific sex and race groups, cancer mortality rates in the state during the period 1968–1977 significantly [1] exceeded national rates for cancers of the esophagus, stomach, colon, and rectum. The environmental variables most frequently associated with GI cancer mortality rates were population density, degree of urbanization, and presence of toxic waste disposal sites (Najem et al., 1983).[2] Similarly, a study was conducted of 593 hazardous waste sites (HWS) in 339 U.S. counties of 49 states where analytic evidence showed contaminated ground drinking water as the sole source of water supply (Griffith et al., 1989). For each identified county, age-adjusted, site-specific cancer mortality rates for 13 major cancer sites were extracted from U.S. Cancer Mortality and Trends 1950–1979 for white males and females in the decade 1970–1979. Significant associations between excess deaths and all HWS counties, when compared to all non-HWS counties, were shown for cancers of the lung, bladder, esophagus, stomach, large intestine, and rectum for white males; and for cancers of the lung, breast, bladder, stomach, large intestine, and rectum for white females.

A particularly important study examined the association between congenital malformations in children and maternal proximity to hazardous waste sites in the state of New York (Geschwind, et al., 1992). The study consisted of a total of 9,313 newborns with congenital malformations, as recorded in the New York State Congenital Malformations Registry, and 17,802 healthy comparison children. A total of 590 hazardous waste sites in 20 New York counties were selected for analysis of the incidence of malformations. (Waste sites in New York City were excluded, given what were presumed unique sociodemographic and geographic characteristics in comparison to the rest of the state.) A coordinate mapping procedure was used to match all case and comparison geographic coordinates to the hazardous waste coordinates. An "exposure risk index" was created for each respondent within a 1-mile radius of the birth residence. Through statistical analysis, the investigators controlled for several possible confounding variables, including maternal age, race, education, complications during pregnancy, birth weight, length of gestation, and sex of child. It is important to note that other possible confounds like smoking and alcohol history, maternal and paternal occupational exposures, and maternal nutritional status were not evaluated due to lack of data. Results indicated that maternal proximity to hazardous waste sites may carry an additional risk of approximately 12 percent of bearing children with congenital malformations. Higher malformation rates were associated with both a higher exposure risk (63 percent increase in risk) and documentation of off-site chemical leaks (17 percent increased risk).

ATSDR funded a study conducted by the New Jersey Department of Health of reproductive outcomes associated with contaminated drinking water (Bove, 1992). Public drinking water systems serving 75 towns in northern New Jersey were evaluated. Hazardous waste sites were thought to have been among several sources of contaminants in the water supplies. All live births and stillbirths (excluding chromosomal defects and plural births) born during the period 1985 through 1988 to residents of the 75 towns were included in the study. The towns selected were not known to have excessive health problems. Information on birth outcome status and maternal risk factors was obtained from vital records and the New Jersey Department of Health Birth Defects Registry. Exposures during each month of pregnancy to drinking water contaminants were estimated for all births in the study using sample data for the public water system serving the town of maternal residence at time of birth. Contaminants evaluated included total trihalomethanes; trichloroeth-

[1] The word "significantly" is used to mean statistical significance, according to some test used by the investigator whose results are being described.

[2] References are available on request.

ylene; tetrachloroethylene; total dichloroethylenes; carbon tetrachloride; and 1,2-dichloroethane. Although some water systems had levels of certain contaminants above federal standards at the time of the study, the study area was not considered to have contamination levels that were atypical of other areas in the U.S. Significant associations were found for the following: (1) Total trihalomethanes were associated with term low birth weight, intrauterine growth retardation, central nervous system defects, and major cardiac defects. (2) Trichloroethylene was associated with neural tube defects and oral cleft defects. (3) Carbon tetrachloride was associated with term low birth weight, intrauterine growth retardation, central nervous system defects, and oral cleft defects. (4) Tetrachloroethylene was associated with oral cleft defects. (5) Dichloroethylenes were associated with central nervous system defects. (6) Dichloroethane was associated with major cardiac defects.

ATSDR supported an additional birth defects study by the California Department of Health Services. They conducted a study to investigate the relationship between maternal residence and the presence of hazardous waste sites for the risk of congenital malformations. The study evaluated births between 1983 and 1985. During this study 5,617 births with congenital malformations were evaluated. The study concluded that maternal residence at the time of the child's birth, in a census tract with a hazardous waste site, significantly increased the risk of giving birth to infants with malformations of the heart and circulatory system.

Studies done both by ATSDR and other researchers indicate that adverse reproductive outcomes may be related to consumption of contaminated drinking water or living in proximity of hazardous waste sites. For example, birth defects and developmental disabilities were evaluated by ATSDR-funded surveillance systems in Iowa, New Jersey, and Washington. These states used birth defects registries and birth records to assess populations in geographic areas potentially exposed to hazardous substances. Excess stillbirths, prematurity, low birth weight, cardiac defects, urogenital defects, limb reductions, clubfoot, oral clefts and neural tube defects may be related to exposures to hazardous substances through contaminated drinking water. Birth defects data from these state surveillance systems will be the subject of additional epidemiologic studies to clarify any associations with hazardous waste sites.

Latent adverse health effects in persons who in the past were exposed to hazardous substances are suggested by findings from ATSDR's National Exposure Registry. Included in the registry are approximately 5,000 individuals with documented exposure to trichlorethylene (TCE). The 5,000 registrants come from 14 sites in Michigan, Indiana, Illinois, and Pennsylvania; 10 of the sites are on the NPL. TCE levels in drinking water ranged from 1 part per billion (ppb) to 19,380 ppm. (The Maximum Contaminate Level for TCE is 5 ppb.) Exposure durations ranged up to 18 years. For essentially all persons on the registry, TCE exposure has ceased due to provision of uncontaminated water. People on the registry report (through a structured health survey) more health problems when compared to national survey data. Some of these problems appear in only males, some in only females, and some in only specific age groups. The health problems which were reported in excess of those reported by the general population included anemia and other blood disorders, diabetes, hearing impairments, heart disease, hypertension, kidney disease, skin rashes, speech impairments, stroke, and urinary tract disorders. Some of the health problems reported by registrants are consistent with the toxicology of TCE. However, caution must be exercised when interpreting these health findings until medical validation studies are conducted of a sample of the 5,000 registry cohort.

Health Studies at Individual Sites

Several investigators have reported adverse health effects associated with specific hazardous waste sites. The principal health findings include: a) significantly shorter height by age for children at a waste site than for comparison children (Paigen et al., 1987); b) a higher prevalence in birth defects and liver diseases among persons living near a thorium waste disposal site than compared to persons living a greater distance from the waste site (Najem and Voyce, 1990); c) lower birthweight and more birth defects in census tracts where exposure to waste site occurs (ATSDR, 1990); d) hepatomegaly and abnormal liver function tests in residents exposed to leachate from a toxic waste dump (Meyer, 1983); e) dermatitis, respiratory irritation, neurologic symptoms, and pancreatic cancer at 7 sites (ATSDR); and f) in residents around a Superfund mining site, illness rates for chronic kidney disease, stroke, hypertension, heart disease, skin cancer, and anemia showed significant elevations (Neuberger et al., 1990). Though none of these studies measured exposure levels to hazardous substances, they add to the scientific database on waste sites and public health.

As an example of an individual site study, a study of a leukemia cluster in children living in Woburn, Massachusetts, found a confirmed increase in incidence, distributed uniformly over an 11-year period (Cutler et al., 1986). The investigators found no leukemia sufferer who had contact with a hazardous waste site, but could not rule out exposure to contaminated water (chloroform, trichloroethylene, tetrachloroethylene) as a factor. Studies of this kind cannot prove causality between incidence of adverse health effects and releases of hazardous substances from waste sites; however, they raise serious questions that should be elaborated through more precise investigation.

Some investigators have examined the kind and frequency of symptoms reported by persons living near hazardous waste sites (Hertzman, et al., 1987). Results from another study indicated that the group exposed to airborne hazardous waste was higher in self-reported complaints referable to the respiratory system, constitutional ills, sensory irritation, and irregular heart beat than a comparison group from an nearby area (Ozonoff, et al., 1987). Similarly, when compared to a reference community, a health survey of persons near a large Superfund site found elevated odds ratios for 23 symptoms, and 8 symptoms had odds ratios greater than 1.5: blurred vision, pain in ears, daily cough for more than one month, nausea, frequent diarrhea, unsteady gait, and frequent urination (Baker, et al., 1988). Another study indicated excess symptom reporting among "exposed" community residents, (i.e., persons living near hazardous waste sites) compared with "unexposed" persons. Symptom reporting was strongly associated with "environmental worry" (Lipscomb, 1989).

In other studies, a) the proportion of cases of congenital heart disease among live births was significantly greater when parents had first trimester residential exposure to trichloroethylene and dichloroethylene-contaminated water, than for the comparison group (Goldberg, et al., 1990); b) when compared to controls, findings from a case-control study showed the frequency of spontaneous abortion was associated with detectable levels of mercury, high levels of arsenic, potassium, and silica, among other factors (Aschengrau, et al., 1989); and c) conduction latency of the blink reflex was lengthened in persons with alleged chronic exposure to trichloroethylene in well water when compared with latencies from laboratory controls (Feldman, et al., 1988).

A considerable number of studies have been conducted to investigate health effects in communities around hazardous waste sites. Many of these studies are negative in the sense that statistically significant increases in adverse health effects were not found (Grisham, 1986; Upton, 1989). Although such findings may represent the true health status of the communities due to limited or no exposure to hazardous substances, negative results can also occur from: inadequate sample sizes, inadequate information about exposure to hazardous substances, poor selection of sites studied, or inappropriate health effects studied for the toxicology of the specific substances found at a given waste site.

A comprehensive review of the published literature on public health implications of hazardous waste was conducted by the National Research Council (NRC, 1991b). This review concluded, "In spite of the complex limitations of epidemiologic studies of hazardous-waste sites, several investigations at specific sites have documented a variety of symptoms of ill health in exposed persons, including low birth weight, cardiac anomalies, headache, fatigue, and a constellation of neurobehavioral problems. It is less clear whether outcomes with a long delay between exposure and disease also have occurred, because of complex methodological problems in assessing these outcomes. However, some studies have detected excesses of cancer in residents exposed to compounds, such as those that occur at hazardous waste sites".

As research proceeds, it is prudent to consider each waste site as a potential source for the release of substances into environmental media that can adversely affect human health. Because of this concern, ATSDR has developed a list of seven priority health conditions to 1) assist in evaluating potential health risks to persons living near these sites and 2) determine program and applied human health research activities involving hazardous substances identified at the sites (MMWR, 1992). To arrive at the priority health conditions shown in Table 1, ATSDR evaluated the toxicological and human health effects data for 50 of the 275 *priority* hazardous substances identified as being released from Superfund sites. In addition, ATSDR drew heavily on the findings from approximately 1,200 public health assessments conducted by the Agency for Superfund sites. These Superfund Priority Health Condition provide ATSDR and others with a framework for conducting health investigations around aggregated waste sites.

Health Studies of Remediation Workers

In addition to concern for the health of communities potentially affected by the release of substances from hazardous waste sites, care must be exercised that the workers who remediate (i.e., clean up) the sites are not harmed by their work. The removal of soil or water contaminated with toxic substances clearly presents the potential for adversely affecting the health of clean-up workers if the necessary precautions are not taken.

Specific regulations for hazardous waste site remediation workers have been developed and promulgated by the Occupational Safety and Health Administration as a mandate in CERCLA, as amended. These regulations, which are contained in 29 CFR 1910.120, require the employer of remediation workers to develop and implement a comprehensive safety and health program for workers involved in hazardous waste operations. A significant requirement of the regulations is periodic medical surveillance of hazardous waste site workers (Melius, 1990). Additionally, worker training grants administered by the National Institute of Environmental Health Sciences provide essential training in protecting workers against the hazards of site remediation.

As an industry, clean up of hazardous waste sites is relatively new in the U.S., but one that involves large numbers of workers. Given the recency of site-specific work, there is only a very limited scientific database on any potential health effects associated with such work. According to one source, clinical and research findings from clinical centers performing health surveillance examinations on hazardous waste workers have not shown remarkable health abnormalities related to the workers' activities (Favata, et al., 1990). From a public health perspective, this is a very desirable outcome. However, the investigators caution that the lack of any health problems in hazardous waste workers may be due to the fact that most of the workers examined had performed feasibility (i.e., inspection and assessment) work, not actual remediation of sites.

I am pleased to note that ATSDR and the Health and Safety Fund of the Laborers International Union of North American, in consultation with CDC's National Institute for Occupational Safety and Health, have jointly developed a health surveillance program for hazardous waste remediation workers. This system will eventually contain the medical information of about 10,000 remediation workers. The data will be evaluated periodically for any evidence of adverse health effects in groups of workers.

Exposure Studies

Concern for public health effects of hazardous substances occur when levels of exposure in humans exceed safe levels. A series of studies conducted by the Agency has documented exposure at some Superfund sites to heavy metals, volatile organic chemicals and/or polychlorinated biphenyls which could put affected residents at increased risk of developmental disabilities, growth retardation, kidney, liver and blood disorders, hypertension or birth defects.For example, the mean blood lead level for children living near the California Gulch site in Colorado was almost twice that predicted by a biokinetics uptake model (CHD, 1990). In addition to lead, increased exposure to arsenic has been reported in children living near waste sites in Montana, Washington, and Utah (ATSDR, 1986; ATSDR, 1987; ATSDR, 1988b; Binder, et al., 1987); elevated serum levels of polychlorinated biphenyls were found in some people at two waste sites (Stehr-Green, et al., 1988), although not at most sites surveyed; and 1,1,2,2-tetrachloroethylene was noted in the breath of persons whose homes were situated near a former chemical waste dump (Monster and Smolders, 1984). Twelve exposure studies conducted by ATSDR found elevated biological levels of hazardous substances of concern. The substances included lead, mercury, PCBs, chlordane, arsenic, and a herbicide.

The importance, and difficulties, of relating environmental contamination levels with human exposure levels is exemplified by the work ATSDR has conducted on persons exposed to lead. In one long-term investigation, ATSDR has worked with the Centers for Disease Control and Prevention (CDC) and the Panhandle Health District in Idaho to conduct blood lead surveillance of children exposed to lead from a smelter. The smelter closed operations in 1982 and the area around it is an NPL site. Lead in soil and dust constituted the principal exposure routes. Through surveillance and intervention efforts, children's mean blood levels have declined steadily from 1974. However, in 1992 about 26 percent of children still exceeded 10 μg/dl. (The current CDC action level for children's blood lead levels is 10 μg/dl.) Efforts are on-going to reduce all children's blood lead levels to below 10 μg/dl.

Other studies of blood lead and soil lead associations have shown quite differing results. In studies at the Smugglers' Mountain NPL site in Colorado, quite high soil lead levels did not result in children's blood lead levels of health concern. ATSDR is currently concluding the data analysis of a study of 2,500 persons potentially exposed to lead in soil. From this study should come a better understanding of the relationship between lead in soil and lead in people.

Emergency Responding and Consultations

I would like to turn now to what we have learned about the other kind of site addressed under Superfund—the emergency release of hazardous substances.

In order to supplement information needed but not provided by the traditional national emergency response databases such as the National Response Center Database, the Hazardous Materials Information System, and the Acute Hazardous Events Database, ATSDR has implemented an active state-based hazardous substances emergency events surveillance system to describe the public health consequences associated with hazardous substance releases. As a result of our activities, the ability of participating states to respond to an emergency involving hazardous substances has been significantly improved.

Five states (Michigan, Iowa, Colorado, New Hampshire, and Wisconsin) collected data during the first 2 years of the project. These states reported a total of 1,249 events to the hazardous substances emergency events surveillance system. Seventy-two percent were fixed-facility and 28 percent transportation-related events. Twenty-eight percent of the events occurred in residential areas.

Respiratory irritation and eye irritation were the most frequently reported health effects, followed by nausea. This holds true for both fixed-facility and transportation events. In transportation events, the victims also commonly received trauma injuries and chemical burns. In all events combined, victims were most frequently employees (64 percent), followed by the general public (22 percent), and first responders such as fire fighters or police officers (14 percent). In transportation-related events, fewer (10 percent) of the victims were from the general public. The data derived from these initial five states clearly have major import for directing the nation's emergency response and prevention efforts.

To deal with hazardous substance emergencies, ATSDR has emergency response coordinators with immediate access to a wide variety of experts, including physicians, chemists, toxicologists, environmental scientists, and health care professionals. Between October 1985 and October 1992, approximately 6300 health consultations were conducted. Approximately 10 percent of those were provided during responses to acute release events.

During this past fiscal year, at the request of EPA regional offices, other federal agencies, and state and local agencies, ATSDR emergency response personnel made five on-site emergency responses, and responded to requests for information related to 83 other acute events. ATSDR's role during these emergencies focused on assisting first responders in addressing the public health needs of the approximately 140 people who were injured as a result of those acute events, and another 92,000 people (range: 1 to 50,000 per event) who were potentially affected.

Besides on-site emergency responses, ATSDR may prepare a health consultation or provide technical assistance in response to requests for information about health risks posed by a specific site, chemical release, or hazardous material. Health consultations can be written or oral; they provide a site-specific answer to a specific question. Consultations are also timely; an oral consultation may be provided on the same day a request is received. Approximately 43 percent of ATSDR's emergency event consultations provided medical guidance and treatment information for requestors.

A special kind of health consultation is the Public Health Advisory. It is a statement of concern from the ATSDR Administrator to the EPA Administrator. As an example, in November of 1990, ATSDR issued a public health advisory informing EPA, the Navajo Nation, the Indian Health Service, and other federal and New Mexico state agencies of a potential significant environmental hazard to human health on Navajo land near Bluewater, New Mexico. ATSDR was concerned that the presence of uranium-containing radioactive mine wastes, areas potentially contaminated with heavy metals, and many physical hazards could result in adverse human health effects to the residents of those areas. Potentially affected persons included 25 individuals in two extended families living in the immediate vicinity and approximately 100 additional persons within a three-mile radius. As a result of this public health advisory, EPA completed an emergency removal of uranium-containing waste ore from the site, thereby reducing radiation exposure by about 80 percent.

As a second example, in 1991 ATSDR, in support of EPA, issued a public health advisory on a potential significant environmental hazard to human health in the vicinity of Austin Avenue, Lansdowne, Pennsylvania. The contaminants of concern included radium, radon, and asbestos in both a warehouse and residential structure. In conjunction with the release of the public health advisory, EPA, at the advice of ATSDR, relocated two families and initiated whole body radiation counts on the families to determine if they had been internally contaminated by radium at the sites. As a result of this public health advisory, EPA surveyed an area extending in a two-mile radius from the Austin Avenue site (encompassing more than 12 square miles of metropolitan Philadelphia, Pennsylvania). Using a specially equipped radiation monitoring van, EPA scanned more than 60,000 homes and identified 21 additional sites with elevated radiation readings. Those sites included single-family dwellings, multi-family units, and a residential care facility.

Toxicological Databases and Data Gaps

The 1986 CERCLA amendments [§ 104(i)(2)] require ATSDR and EPA to jointly rank, in order of health importance, hazardous substances released from waste sites. The agencies have agreed on a list of 275 Superfund Priority Hazardous Substances. The first ten substances on the list are lead, arsenic, mercury, vinyl chloride, benzene, cadmium, PCBs, chloroform, benzo(a)pyrene, and trichloroethylene.

ATSDR is directed by CERCLA [§ 104(i)(3)] to prepare a Toxicological Profile for each Priority Hazardous Substance. We have developed 176 profiles to date which are up-to-date compilations of all that is known about the health effects of these substances. Over 1 million of these profiles have been distributed and we are told that the Toxicological Profiles are extremely useful to government agencies, private industry, and concerned community groups.

These profiles also serve the function of identifying key data gaps in scientific knowledge about these substances. For example, exposure to what levels of mercury will result in an acute health effect? Does drinking benzene contaminated water cause birth defects? Does eating fish contaminated with PCB's cause illness? Does long-term exposure to zinc cause cancer?

As directed by CERCLA [§ 104(i)(5)], ATSDR, in cooperation with EPA and the National Toxicology Program must evaluate the adequacy of scientific data for each of the 275 prioritized substances. Key gaps in scientific knowledge are to be filled through referral to EPA's Toxic Substances Control Act authorities and other mechanisms. The 117 key data gaps for the first 38 substances on the Priority List of Hazardous Substances were published in 1992.

CERCLA directs that ATSDR work with EPA, National Toxicology Program, and industry to initiate applied research to fill identified data gaps. ATSDR has referred 60 key data gaps to EPA for handling under their Toxic Substances Control Act authorities. Some key data gaps are being filled by funding from ATSDR, as directed by Congress, through research grants to academic institutions in the Association of Minority Health Professions Schools and to academic and state health departments in support of health research mandated by the Great Lakes Protection Act. It is also possible that some data gaps will be filled voluntarily by private industry, though that has yet to be realized.

Health Education

Turning to another of our mandates, CERCLA [§ 104(i)14] directs ATSDR to develop educational materials and provide training for medical colleges, physicians and other health professionals. To this end, we have developed a series of monographs entitled *Case Studies in Environmental Medicine* to inform health care professionals of health effects caused by hazardous substances in the environment. Twenty documents are currently available, with another 15 in various stages of development. These self-instructional exercises in environmental medicine are designed to guide primary care practitioners through the diagnosis and treatment of illness in persons exposed to hazardous substances in the environment. The documents are prepared and peer reviewed with the assistance of physicians and other health care professionals, including representatives of a number of professional medical societies and associations.

Since 1986, as part of our educational efforts we have:

- trained over 20,000 health professionals,
- distributed more than 140,000 copies of the Case Studies, and
- trained more than 250 minority health professionals.

Preliminary feedback indicates that communication between physician and patient about the health effects of exposure to hazardous substances has improved,

and that physicians, in some instances, are actually changing their practice in some communities where we have provided training.

Roles of State Health Departments and Communities

Our key partners in conducting our work are EPA and state/local health departments. One main purpose of our support to state and local health departments is to improve the ability of health agencies to respond to community health concerns. I refer to communities around Superfund sites and other areas of pollution. Their legitimate health concerns need the coordinated response of government at all levels.

In 1986 when Congress reauthorized Superfund, it was clear that they strengthened the statute's health section, and it was equally clear to ATSDR that Congress envisioned a partnership between states and ATSDR in implementing these health provisions.

In 1987 the Agency committed itself to a goal of building or enhancing state health departments' capacity in environmental health. From fiscal year 1987 through 1992 we provided about $40,000,000 in funds to states through a series of cooperative agreement programs. This figure represents approximately 15 percent of ATSDR's total budget during this period, a substantial figure, given other budgetary demands on the Agency.

We have also continued to strengthen our focus on community involvement as an integral part of conducting our activities. During the past year, Agency personnel made approximately 8,000 personal contacts with members of communities near hazardous waste sites.

Community Assistance Panels have been found to be an effective means of fostering communication between ATSDR and site communities. A community assistance panel has three primary purposes: 1) to facilitate communication between ATSDR and the affected community; 2) to provide an ongoing series of community-based meetings to ensure community involvement throughout the public health assessment process; and 3) to provide information to ATSDR on the community's health concerns for inclusion in the public health assessment.

ATSDR also is increasing its use of public availability sessions-informal, drop-by meetings at which community members can meet one-on-one with ATSDR staff to discuss health and site concerns. Other site-specific community involvement activities that we have found useful include small group briefings for key community leaders, a practice that enables ATSDR to solicit information from grassroots leaders about how best to interact with their constituents and to address their concerns, and to provide up-to-date information about ATSDR activities in their community.

SUMMARY

Although ATSDR has learned a great deal in the 6 years since Superfund was reauthorized, we have a long way to go. But we need to know a lot more in order to improve how to prevent adverse health effects in affected communities. The National Academy of Sciences 1991 report *Environmental Epidemiology: Public Health and Hazardous Waste* recommended that a number of research strategies and techniques be applied to the study of health effects linked with hazardous waste, including the use of "sentinel health events" as indicators of contamination and exposure. The report concludes with the exhortation that a window of opportunity exists to initiate studies in areas of contamination and an important opportunity for prevention that could forestall major public health problems in the future. Health officials and scientists are unable to answer many significant questions about the impact on public health of hazardous wastes, and until better evidence is developed, the NRC advises "prudent public policy demands that a margin of safety be provided regarding potential health risks from exposures to substances from hazardous waste sites."

Mr. Chairman, this concludes my testimony. I will be pleased to answer questions.

TESTIMONY OF DAVID M. KENNEDY, DIRECTOR, HAZARDOUS MATERIALS RESPONSE AND ASSESSMENT DIVISION, NATIONAL OCEAN SERVICE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE: Thank you for the opportunity to speak with you today. I am Dave Kennedy, Director of the Hazardous Materials Response and Assessment Division, Office of Ocean Resources Conservation and Assessment, National Ocean Service, NOAA. I have been asked to speak to you today about my experiences with the Superfund Program and my assessment of the potential environmental and ecological damage that hazardous waste sites can pose. With me is one of my Branch Chiefs, Dr. Alyce Fritz. Dr. Fritz helped develop, and

now runs our Coastal Resource Coordination Program, which works closely with EPA to protect natural resources at Super fund sites.

Dr. Fritz and I are here to share the experiences and insights that we have gained by working with EPA through the Superfund process over the last 8 years.

As you know, the Secretary of Commerce is a natural resource trustee under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). He has delegated this authority to NOAA, and NOAA serves as the primary Federal trustee for coastal and marine natural resources. Natural resources under NOAA's stewardship include: all commercially and recreationally important fish species throughout the exclusive economic zone; anadromous fish throughout their range such as salmon; numerous endangered and threatened species including turtles; marine mammals including sea lions and whales; and specially protected resources in National Marine Sanctuaries and National Estuarine Research Reserves. NOAA, based on its trust responsibilities for living marine resources, is concerned with the protection of the wetlands, rivers, streams, estuaries, and other habitats critical to our trust species' survival. Our jurisdiction extends as far inland as Idaho, where salmon swim upstream to spawn; and miles offshore, where tuna, squid, whiting, and other valuable fish stocks live and feed.

NOAA is one of several potential trustees at a Superfund site. Other Federal trustee agencies include the Departments of Agriculture, Defense, Energy and the Interior. Individual states and Indian tribes also act as trustees for natural resources.

NOAA has developed a coordinated program to implement its trustee responsibilities under CERCLA and other statutes including the Clean Water Act and the Oil Pollution Act. This coordinated program has three primary components: the Coastal Resource Coordination Program, the Damage Assessment Center, and the Restoration Center. Each of these components has a unique and vital role to play in protecting and restoring injured trust resources. I will focus on the Coastal Resource Coordination Program because it is an unusual, but highly effective way that we carry out our trustee responsibilities.

The Coastal Resource Coordination Program places biologists, toxicologists, and wetlands experts in EPA regional offices to work closely with EPA's Superfund project managers. Through this process, we can address natural resource concerns during the normal course of a Superfund cleanup and through settlements negotiated as part of EPA's remedy package. If our trust resources are protected and restored by a Superfund remedy package, there is no need for a formal Natural Resource Damage Assessment and subsequent litigation unless compensation for past injuries is sought. This approach saves money and time by avoiding the need for a comprehensive natural resource damage assessment and potential litigation. We have been very successful with this program, and today about 95 percent of the Superfund sites addressed by NOAA are handled through the Coastal Resource Coordination Program.

When the Coastal Resource Coordination Program is unable to reach a settlement with the potentially responsible parties, or when the residual injury is unusually great, the site is handled through the formal damage assessment and litigation process. In such cases, NOAA's Damage Assessment Center conducts a damage assessment and works with the Office of the General Counsel to file claims against potentially responsible parties. While the Damage Assessment Center handles a relatively small number of sites, damage assessment sites almost always are large sites that pose significant threats to NOAA trust resources. Since its inception in 1990, NOAA1s Damage Assessment Center has initiated more than 40 cases and recovered approximately $130 million in claims for damages caused by oil and chemical spills or releases. Recovered damages are used by NOAA's Restoration Center to design and implement projects to restore injured resources.

Through more than 8 years' experience at more than 500 Superfund sites, NOAA has gained an understanding of, and appreciation for, the risk that hazardous waste sites can pose to our trust resources. Superfund sites can degrade, or even destroy, wetlands and other valuable habitat. Degradation of habitat can have wide reaching effects on the health of entire ecosystems, including endangered species and recreational and commercial fish stocks. The fish, turtles, and other animals that live, spawn or feed in contaminated areas can be weakened or eventually destroyed by toxic materials. Fish stocks may be injured or destroyed because contaminants cause reproductive and immune system changes. contaminants may also destroy or radically alter the benthic communities that serve as food for fish stocks. Later in my testimony, I will give you more specific examples of the threat that hazardous waste sites can pose to natural resources.

The Superfund program, quite correctly, is designed to address human health concerns first. But hazardous waste sites may also threaten natural resources, and unfortunately, remedies designed to protect human health do not necessarily fully protect natural resources. There are two principal reasons.

First, the pathways to humans are often different than the pathways to natural resources. So shutting off human access to a contaminant will not necessarily prevent natural resources from coming into contact with that same contaminant. NOAA trust resources are often threatened by sediment contamination at Superfund sites, not by groundwater or soil contamination. Just the opposite is true for humans. To protect human health, EPA will clean up contaminated groundwater and soil. But unless there is a human pathway (i.e., a commercial fish stock that feeds in the contaminated area), EPA is less likely to push for thorough cleanup of contaminated sediment.

Second, fish and other marine organisms often are more sensitive to certain contaminants (for example, metals and PCBs) than are humans. Contaminants of greatest concern to NOAA are those that can accumulate in tissues of aquatic organisms and those contaminants that can cause direct toxic effects over short or long term exposures. Bioaccumulation of contaminants is a concern not only because the contaminants may make fish unfit for human consumption, but also because accumulations may harm the organisms themselves or the animals that prey on the contaminated species. Cleanup levels that are protective of human health will not necessarily protect natural resources because aquatic organisms are more sensitive to some contaminants and because some aquatic organisms bioaccumulate contaminants.

These injuries and the costs associated with them are not insignificant. As I mentioned earlier, NOAA has recovered almost $130 million in natural resource damages in the past 3 years.

I would like to take a few minutes to give you some examples of sites where NOAA trust resources are, or have been, seriously threatened by a contaminant release. As some of the examples will show, the Superfund process can allow us to reduce much of the risk faced by natural resources. I will discuss five sites.

Blackbird Mine—The Blackbird Mine site is in a remote area near Salmon, Idaho, on Panther Creek, a tributary to the Salmon River in the Columbia River system. Cobalt and copper mining over the last 100 years has denuded approximately 1000 acres of mountainous terrain in this watershed. As a direct result of the mine discharges, the salmon run in this creek was entirely wiped out in the early 1960s. The salmon run has never recovered, despite attempts by local Indian tribes and the State of Idaho to restock the stream. Although the site is now inactive, acid and metals continue to leach into surface waters. The entire Panther Creek watershed can no longer be used for spawning and rearing by the threatened Chinook salmon. Recreational use of this area, part of the Salmon National Forest, has been diminished.

Local officials have known of the existence of this site for more than 30 years, but until recently had not assessed its environmental risk. Before CERCLA was passed, there was no mechanism for cleaning up this type of hazardous material release. And until the Hazardous Ranking System was modified in 1990 to broaden consideration of environmental as well as human health concerns, this site would not have scored high enough to be considered for the National Priorities List (NPL). Using the new system in 1992, EPA is now considering the Blackbird Mine site for the NPL. Our Coastal Resource Coordination Program will work to determine whether any selected remedy could conceivably provide for the reintroduction of anadromous resources in the Panther Creek system.

Hudson River—The Hudson River, confined almost entirely within the State of New York, flows 300 miles from its source in the Adirondack Mountains to its mouth at New York Harbor. PCBs were discharged into the upper Hudson River from capacitor manufacturing plants operated by the General Electric Company beginning in 1947 at Fort Edward, and in 1952 at Hudson Falls. GE reportedly discharged between 227,000 and 500,000 kg of PCBs into the Hudson River during this period. Initially, most of the PCBs were trapped in sediment behind a dam at Fort Edward. The dam was removed in 1973, and almost a million cubic meters of PCB-laden sediments were washed downstream. Discharges of PCBs into the Hudson River ceased in July 1977, but contamination has extended to all 192 miles of river sediment downstream of the site. The primary resource of concern to NOAA is the habitat of the lower Hudson River below the Federal Dam at Troy, which is located 147 miles from the mouth of the river. The estuary provides habitat to numerous fish species during critical periods of their life history. Important anadromous fish in the Hudson River include striped bass and the endangered shortnose sturgeon.

The Hudson River fishery resource is of considerable value. Elevated levels of PCBs in striped bass, white perch, and American eel have resulted in the closure of both commercial and recreational fisheries for these species in the Hudson River. The striped bass fishery has been closed since 1976. In 1985 this ban was extended to Long Island Sound. The upper Hudson River is closed to recreational fishing above the Troy Dam because of PCB contamination.

Diamond Alkali—The Diamond Alkali site, where pesticides were manufactured between 1914-1977, is located on the Passaic River estuary in Newark, New Jersey. The principal contaminants of concern from the site are dioxins, which have contaminated sediments throughout the lower Passaic River and Newark/Raritan Bay and to an unknown extent offshore. Contamination from the site's dioxin releases has caused fisheries advisories and closures since 1983. Sediments contaminated with dioxin have been dumped at the New York Bight dredged material dumpsite in the past (before presence of contamination was detected) and have resulted in environmental degradation and concerns over widespread contamination of fisheries. Resource managers and trustee agencies are concerned with the significant ecological threat that this site poses to natural resources, especially to endangered species (i. e., American shad and shortnose sturgeon).

Species of concern to NOAA at this site include blueback herring, alewife, striped bass, Atlantic menhaden, weak fish, spot, Atlantic croaker, summer flounder, winter flounder, bluefish, bay anchovy, white perch, and blue crab. These fisheries are very valuable: in 1985, total landings in New Jersey for bluefish alone had an estimated value of $2.4 million.

This site, like the Hudson River site, is a classic case of upstream contamination affecting the entire river below the site. The Diamond Alkali site affects more than just natural resources; because of the contamination released at this site, operations of the New York/New Jersey Port also are at risk. The extensive dioxin contamination in the sediments has prevented further maintenance dredging in the bay until the questions concerning alternatives for disposal of contaminated dredged materials can be resolved.

NOAA is working with the State, EPA, and the Army Corps of Engineers at the Diamond Alkali site to compile information on the effects of dioxin on the watershed. An ecological risk assessment will be conducted as part of the overall remediation effort. By addressing dioxin contamination of the bay as part of the CERCLA process, the source of dioxin affecting the resources of the bay can be removed and costly litigation can be avoided.

Stauffer Chemical Company—The Stauffer Chemical Company is located in Tarpon Springs, Florida, some twenty-five miles north of Clearwater. The mouth of the Anclote River, a tidal estuary that flows into the Gulf of Mexico, is approximately 0.6 miles away from the plant. From 1950 to 1981, the facility manufactured elemental phosphorus from phosphate ore. During that period, over 450,000 metric tons of processing wastes were disposed of on site. Waste scrubber material, roaster fines, and slag were placed in unlined lagoons, drums, and concrete pits.

Although this site is still in the early stages of investigation, we believe the site poses some significant risks. We are concerned about a number of contaminants, particularly arsenic, lead, nickel, and zinc; we are also concerned about fluoride and radionuclides. In the vicinity of the site, aquatic habitats support diverse and abundant populations of resources including anchovies, drums, flounders, grunts, herrings, jacks, pompanos, mullets, stingrays, and tarpons. In the Anclote National Wildlife Refuge 1.5 miles west of the site, clam and scallop beds are common. Surface waters in the surrounding area provide habitat for several threatened and endangered species including green, loggerhead, hawksbill, Kemp's ridley, and leatherback turtles. West Indian manatees, a federally endangered species, use a spot approximately one mile upstream as a wintering area. NOAA will continue to work with EPA at this site to evaluate ecological risk and to help define an appropriate remedy.

Concord Naval Weapons Station—The Concord Naval Weapons Station is adjacent to San Francisco Bay, California, and it includes a large salt marsh area that is surrounded by private industrial sites. Industrial waste from these private sites flowed across the marsh for many years and resulted in significant contamination of sediments with arsenic and other heavy metals. The Navy spent considerable resources to investigate contamination and ecological risk in the wetland. Resulting cleanup criteria were based on the State's definition of hazardous waste and were not appropriate for the protection of natural resources. Significant questions remain about the design of studies and appropriateness Of the methods used to evaluate ecological risk. Remediation was scheduled to begin in a portion of the marsh where sediments

exceeded the remedial criteria. However, the remediation proposal called for only a portion of the area exceeding the criteria for remediation to be cleaned up. EPA has intervened and has proposed the site for inclusion on the NPL. Recently, NOAA and the State of California have recommended appropriate measures to investigate the need for remediation in the marsh.

It is clear that some hazardous waste sites injure fish, shellfish, marine mammals, and other marine organisms. More importantly, waste sites may destroy valuable marine, estuarine and coastal habitat. The cumulative effect of hazardous waste sites in the coastal zone is significant.

The good news is that most of the risk to natural resources can be removed with appropriate measures. And although addressing natural resource concerns always costs more than ignoring them, it does not have to cost a lot more than addressing human health concerns alone. The way to minimize the cost of restoring injured natural resources is to build natural resource protection into the process from the very start. If natural resource protection is part of the goal from the beginning and each step in the process considers the environment, then the end result will be a remedy that protects both humans and the natural environment. This approach is efficient because it takes advantage of existing opportunities. For example, if sampling to assess environmental effects is included in the initial sampling plans, a separate survey to examine natural resources will not be necessary. And if the remedy includes designing a cap that will destroy less wetland, or replanting marsh grass damaged during the remedy, there will be no need for a second mitigative action. NOAA has worked hard over the past 8 years to see that natural resource concerns are addressed in the most efficient way possible—as part of the Superfund process.

As cumbersome as the Superfund program may seem, it has already done a great deal to reduce the risk to our Nation's natural resources. I have given you several examples to show how CERCLA can work to protect specific types of resources.

Mr. Chairman, this ends my prepared statement. I would be happy to answer any questions that you or the other Subcommittee members may have.

STATEMENT OF BRUCE BLANCHARD, DEPUTY DIRECTOR, U.S. FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR

Thank you, Mr. Chairman, for the opportunity to testify on behalf of the U.S. Fish and Wildlife Service concerning the ecological impacts of hazardous waste sites. My statement will provide examples of our work at Superfund sites, along with general information on the effects of contaminants on fish and wildlife resources. Through our resource management initiatives, the Service is confirming scientist's suspicions that many sensitive and essential wildlife habitats are suffering from long-term adverse impacts of point-source pollution and other contaminant insults that are degrading and, in some cases, eliminating residual habitat so necessary to the continued health of these species.

The Environmental Contaminant Program provides the Service with the capability to assess contaminant pathways, prevent exposure, if possible, and to clean up areas exposed to a full range of environmental contaminants, including Superfund sites. Contaminant specialists identify contaminant related resource issues, conduct investigations pertaining to endangered species management, provide technical expertise to other fish and wildlife programs, and contribute to fish and wildlife resource programs directed at maintaining environmental health and integrity.

Many classes of contaminants are found at hazardous waste sites, such as: polycyclic aromatic hydrocarbons (PANs), polychlorinated biphenyls (PCBs), organochlorines, organophosphates, and heavy metals. Although many of these can cause acute lethal effects on fish and wildlife, most exert more insidious long-term chronic effects due to their persistence in the environment.

Historically, the primary consideration of the Environmental Protection Agency in the identification and designation of hazardous waste sites, and subsequent site investigation and remediation activities, has been the imminent threat to human health resulting from contaminated drinking water supplies. If conducted at all, most biological studies were geared toward implications for human health, such as contaminant analysis of edible portions of fish. For the most part, ecological and environmental impacts were neglected. However, it has become increasingly clear that cleanup standards and criteria based solely on protection of human health may not be consistent with the generally more stringent criteria needed for the protection of fish and wildlife.

Through contaminants field investigations, damage assessment activities, and contaminants research, the Service has discovered numerous and varied sub-lethal im-

pacts to fish and wildlife resources resulting from contaminants in the environment. Detrimental and deleterious effects of contaminants are manifested at various levels of biological function and can include biochemical, histopathological, neurophysiological, fetotoxic, teratogenic, and reproductive effects. Impairment of biological functions affects individual organisms and populations in ways that can ultimately threaten the existence of entire species and, in turn, the communities of associated organisms to which they are inextricably connected.

Society is alarmed by the sight of millions of fish or waterfowl killed by a catastrophic release of a hazardous substance or oil, and equally disturbed by the sight of wildlife exhibiting physical deformities, both of which can make for dramatic photojournalism. Unfortunately, less thought is given to an outwardly normal animal that may have an excessive body burden of contaminants.

Fish and wildlife have been shown to suffer such maladies as: increases in diseases and other pathological changes correlated with the presence hazardous substances; alteration of a variety of behaviors such as locomotor activity, ventilation frequency, learning ability, swimming performance (fish), nervous system functions, and avoidance response; benign and malignant neoplastic growths of cells in the body associated with point source concentrations of hazardous substances; physiological malfunctions which pose problems to survival and reproduction; and physical deformations which may increase susceptibility to predation, affect the organism's range or ability of motion, or ability to feed, thus lessening the chances of survival.

Through contaminant field investigations and reconnaissance surveys, the Service has documented such problems as: fin erosion (fin rot) in Dover sole off the coast of Southern California and in Puget Sound, linked to fin interactions with sediments contaminated by municipal and industrial waste; carcinomas in brown bullheads at Love Canal; eggshell thinning in birds nationwide, caused by organochlorine pesticides; crossed bills in populations of cormorants and terns in the lower Great Lakes, related to exposure to PCBs and dioxins; and some river segments and associated riparian and upland habitats in Oklahoma and Texas rendered useless and incapable of supporting any life form, resulting from the release of heavy metal-laden dusts and acidic waters.

Some populations of important fish species in the Great Lakes are sustained entirely by hatchery production because of total inability to reproduce due to contaminants, many from hazardous waste sites and illegal discharges.

Many areas adjacent to or downstream of hazardous waste sites exhibit drastic decreases in biodiversity, with a predominance of the remaining species being very pollution tolerant. For example, the Grand Calumet River in Northern Indiana is sustaining considerable impacts to its ability to support biodiversity, as exhibited by the predominance of carp.

In some cases, due to contaminants from mining or smelting activities, many square miles may have little or no vegetation at all. The loss of habitat or food resources can be far more devastating to fish and wildlife populations than the occasional massive kills featured in the news.

Participation and coordination with EPA provides the Service with the necessary information with which to make a determination that considerable and widespread injury to biological resources has occurred. Efforts of the Service on behalf of federally protected resources benefits all natural resources, as it is nearly impossible to address one set of resources to the exclusion of others. In the long run, it is the less obvious effects which are often far more damaging to fish and wildlife populations. Loss of habitat, inability to reproduce, and loss of normal functions prevents recovery of populations.

The Service draws its operational Environmental Contaminant Program expertise from a long history of research on the effects of contaminants on fish and wildlife. This Program has a mandate to prevent, monitor, and assess environmental contaminants and their impacts on fish and wildlife resources. Fish and wildlife biologists and contaminants specialists are available to help conduct ecological/biological evaluations at hazardous waste sites.

In addition to damage assessment activities, in cooperation with EPA, the Service plays an important role in providing technical assistance on the protection of fish and wildlife during the remediation of hazardous waste sites. These technical services include assessment of contaminant effects on fish and wildlife, conduct of biological studies and investigations, participation in technical review of hazardous waste site remedial activities, and advice on compliance with laws affecting fish and wildlife and their habitats.

The Service participates on many of the Biological Technical Assistance Groups (BTAG) established in most EPA Regions to assist in biological review of hazardous waste sites. Through the BTAG, we are providing technical assistance to help EPA

identify, avoid and/or mitigate impacts to fish and wildlife resources that may result from migration of contaminants from the site, or implementation of the selected remedy.

Because of the Service's mission, we have developed a workforce with strong backgrounds and skills in biology, wildlife management, toxicology, risk assessment, and the ability to integrate this knowledge with legal mandates of the Service and EPA. This expertise uniquely qualifies the Service to conduct Ecological Risk Assessments, which are an integral part of hazardous waste site evaluations. Ecological Risk Assessments focus on the appraisal of the actual or potential effects of a hazardous waste site on plants and animals other than humans and domesticated species.

Effective coordination of environmental investigations, biological studies, and ecological assessments early in the process through the BTAGs will often eliminate data gaps which necessitate additional studies. Effective coordination between the Service and EPA at the earliest stages of site activity also potentially reduces the degree of residual injury carryover into the damage assessment review stage.

The Secretary of the Interior has trust responsibility for Federal land, mineral, and natural resources under the jurisdiction of Interior bureaus. The Fish and Wildlife Service has management responsibilities for anadromous fish, endangered species, migratory birds, some marine mammals, and their habitats.

Because of these management responsibilities, the Service conducts natural resource damage assessments to recover damages for injury to those resources. As the primary bureau in the Department of the Interior with responsibilities for biological natural resources, the Service works closely with other trustees (Federal, State, and Tribal) to ensure restoration or replacement of injured natural resources at the expense of the polluting party.

Although EPA is not a trustee agency, they are generally kept informed of damage assessment activities. Information gathered through EPA's Remedial Investigation/Feasibility Study activities is useful in determining possible injury to natural resources. Additionally, review of the selected remedy assists in determining whether there will be residual or outstanding impacts to natural resources that are not addressed through implementation of the remedy.

Presently, the Service is conducting several natural resource damage assessments at hazardous waste sites across the country, including, to name a few: the Commencement Bay assessment in progress with NOAA and the State of Washington; Lavaca Bay aluminum plant site, with the State of Texas and the National Oceanic and Atmospheric Administration (NOAA); the Montrose/Los Angeles Bight assessment, with the State of California, the National Park Service, and NOAA; and the Cherokee County, Kansas, Superfund site. The Service's focus is the assessment of impacts not corrected or restored through the remediation process, together with assessment of the associated injury to fish and wildlife resources.

The Service is encouraged by the efforts of EPA to develop criteria for the cleanup of hazardous sediments, as well as cleanup criteria for the protection of biological/fish and wildlife resources. The Service looks forward to working with EPA to more fully protect biological/fish and wildlife resources affected by hazardous waste.

Thank you again, Mr. Chairman, for the opportunity to address this important issue. I will be pleased to respond to any questions you may have.

SUPERFUND FACTS

1,235 Superfund Sites Nationwide

There are over 33,000 CERCLIS hazardous waste sites throughout the United States

80% of known hazardous waste sites are in, adjacent to, or drain into wetlands

40% of wetlands remaining in the United States are degraded

Wetlands and other fish and wildlife habitat can be restored through remediation by coordinating engineering with biology throughout in the Superfund Process

Natural Resource Damage Assessment Appropriations to the Department of the Interior in FY'92 and FY'93 funded 15-20 large projects. Smaller projects (150-200) are being accomplished through negotiation and settlements, realizing millions of dollars in restoration funding.

Natural Resource Damage Assessment Fund Collections in the Department of the Interior:

$56.3 million from Exxon Valdez

$ 5.7 million from other projects

CONTAMINANT FACTS

Approximately 1/3 of endangered species are affected by contaminants

38% of fish extinctions were due to contaminants

United States Water Bodies Affected by Contaminants:

90% of Great Lakes shorelines

1/3 of lakes and reservoirs

1/3 of coastal waters

1/3 of river miles

1/4 of estuaries

Commercial and recreational fish stock declining

Waterfowl populations declining

68-053 O - 94 - 5

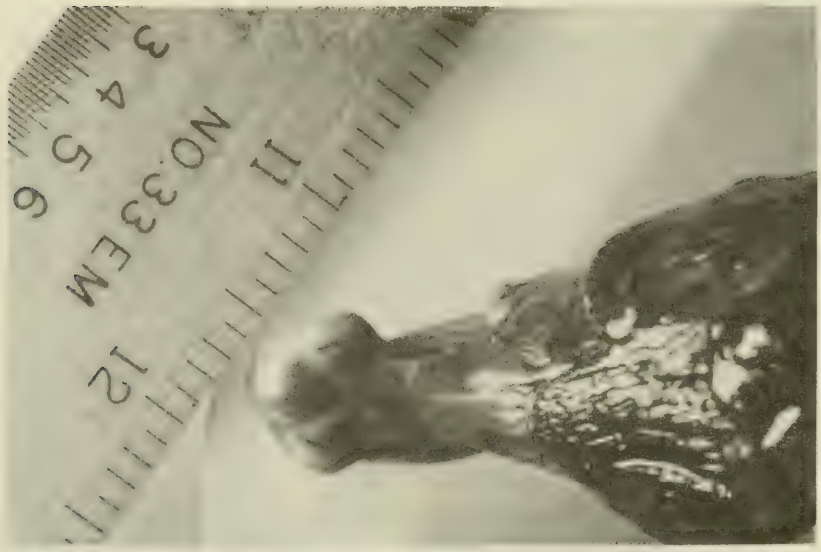
Natural Resource Damage Settlement Receipts in DOI Fund
November 27, 1992

SUB-ACTIV	PROJ NO	SITE NAME	STATE	$$ COLLECTED
		Region 1		
8353	0005	St Paul Waterway (Comm Bay)	WA	10,000.00
8353	0001	Commencement Bay	WA	5,000.00
8353	0013	Nestucca Oil Spill	WA	100,000.00
		Total R1		115,000.00
		Region 2		
8353	0033	High Island Oil Spill	TX	18,500.00
8353	0003	Lavaca Bay	TX	99,487.91
		Total R2		117,987.91
		Region 3		
8353	0034	Crab Orchard NWR	IL	2,573,474.42
8353	0006	Ninth Ave. Dump	IN	23,673.48
8353	0007	Missouri Dioxin	MO	200,000.00
8353	0008	Envirochem	IN	53,776.82
8353	0012	I. Jones Recycling	IN	31,308.93
8353	0017	Great Lakes Asphalt	IN	300.00
8353	0018	Fisher-Calo	IN	20,000.00
		Total R3		2,902,533.65
		Region 4		
8353	0009	Lake Salvador Oil Spill	LA	12,162.00
8353	0014	Phoenix-Capital (Vertac)	AR	42,000.00
		Total R4		54,162.00
		Region 5		
8353	0010	Publicker NPL	PA	40,000.00
8353	0015	Exxon Bayway Oil Spill	NJ	3,373.00
8353	0016	World Prodigy Oil Spill	RI	54,886.52
8353	0023	Army Creek	DE	266,000.00
8353	0022	St. Lawrence	NY	2,404.71
		Total R5		366,664.23
		Region 6		
8353	0011	Sharon Steel NPL	UT	2,300,000.00
		Total R6		2,300,000.00
		Total R1-6		5,856,347.79
		Region 7		
8351	X001	Exxon Valdez (civil)	AK	50,000,000.00
8351	X002	Exxon Valdez (criminal)	AK	6,320,500.00
		Total R7		56,320,500.00
		Total R1-7		62,176,847.79

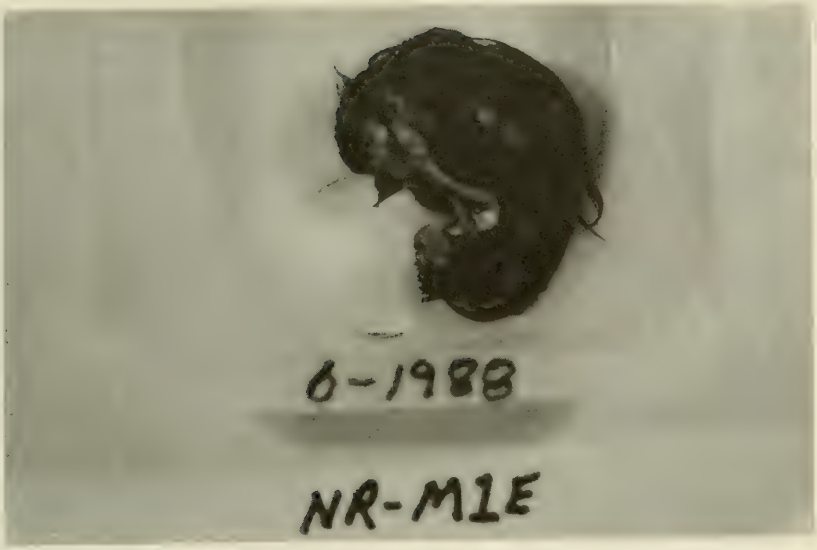
Brown bullhead(from Cuyahoga River, Ohio) with lip papilloma, stubbed barbels, blindness and skin discoloration (melanoma) possibly caused by Contaminated Sediments.

Front view of a brown bullhead (from Cuyahoga River, Ohio) showing lip papilloma, stubbed barbels and skin discoloration (melanoma) potentially caused by contaminated sediments.

Brown bullhead liver with nodules indicating potential cancer caused by contaminated sediments from Black River, Ohio



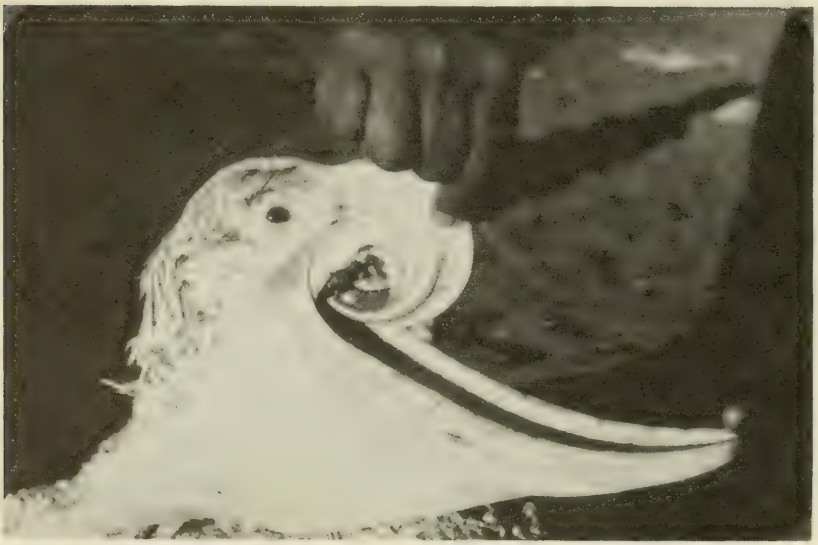
A Deformed Embryo with clubbed bill caused by contaminated irrigation drainage in the Central Valley, CA



Deformed Embryo caused by contaminated irrigation drainage on the Middle Green River Irrigation Project, UT.

Deformed Embryo caused by contaminated irrigation drainage on the Kesterson National Wildlife Refuge, CA.

Deformed Embryo caused by contaminated irrigation drainage on the Kesterson National Wildlife Refuge, CA.

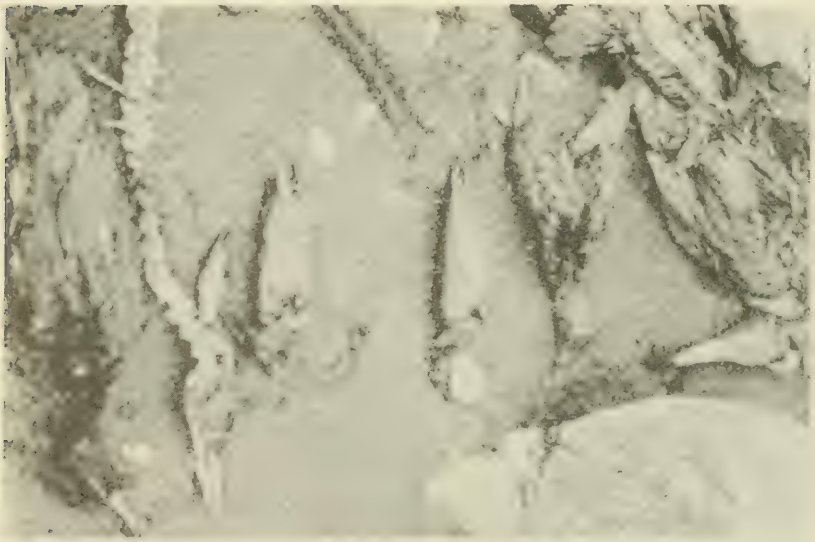


Deformed upper beak on Adult White Pelican caused by irrigation drainage.

Deformed Embryo caused by contaminated irrigation drainage on the Kesterson National Wildlife Refuge, CA.

Dead eastern bluebird collected in Virginia corn field treated with the pesticide Carbofuran.

Dead birds collected at cyanide heap leach sites at South Dakota gold mines.



Oiled and scavenged birds from the Exxon Valdez Oil Spill, Alaska.

Dead northern pintails (waterfowl) poisoned by the pesticide Carbofuran in California.

Fishing advisory resulting from contaminated irrigation drainage at Sweitzer Lake--Uncompahgre Irrigation Project, CO.

Eggshell thinning and softening caused by the pesticide DDT.

Contamination of riparian habitat by crude oil from ARCO - Four Corners pipeline break in Beaumont, California.

Deformed American Avocet resulting from exposure to contaminated irrigation drainage at the Kendrick Irrigation Project, WY.

Written Statement of the Association of State and Territorial Health Officials

The Association of State and Territorial Health Officials (ASTHO) represents the chief health official in each of the 50 states, the District of Columbia and the U.S. territories. We appreciate this opportunity to present our written statement related to Superfund Reauthorization.

One of the most important changes to the Superfund program contained in the 1986 Superfund Amendments and Reauthorization Act (SARA) was the requirement that the Agency for Toxic Substances and Disease Registry (ATSDR) conduct a public health assessment for each site on the National Priority List (NPL) and for each site proposed for inclusion on the NPL. Public health assessments are especially important because they realistically assess past, current, and possible future exposure to chemicals from a site and the impact from exposure on the health of the affected community. Many of these public health assessments are performed through cooperative agreements between ATSDR and state health agencies. In fact, ATSDR currently funds twenty-two states, covering approximately 80 percent of all NPL sites, to draft public health assessments. As a result, state health agencies are able to bring to the public health assessment process a knowledge and appreciation of local conditions as well as community needs and concerns. This support provided by ATSDR has dramatically improved the ability of state health agencies to respond to community health concerns regarding hazardous waste sites and has enhanced state health agencies' capacity in environmental health in general.

State health agencies have become important players in developing and providing health education information to health professionals on medical surveillance, screening, and methods of diagnosis and treatment of injury or disease related to exposure to hazardous substances. State health agencies, in cooperation with ASTHO, have been instrumental in providing risk communication workshops to health professionals in state and local health agencies throughout the country.

In short, state health agencies have formed an effective partnership with ATSDR in addressing the very real public health and medical concerns posed by hazardous waste sites. The wealth of knowledge and experience attained by state health agencies in addressing the public health concerns of toxic waste sites provides an important vantage point to offer recommendations to the Senate Subcommittee on Superfund, Recycling, and Solid Waste Management on improving the Superfund program.

In general, ASTHO believes that the health provisions of CERCLA, Section 104(i), should remain largely intact. They provide an important foundation for insuring that there is a public health orientation to the Superfund program for three key areas: 1) site-specific, short and long term evaluations of public health problems through public health assessments, health studies, surveillance and registries; 2) chemical specific identification of key health information and research needs; and 3) health professional and community education activities.

However, in order for public health concerns to be routinely considered in EPA's decisions on clean-up and site closure, EPA must be directed to involve ATSDR in their decision-making process. ATSDR needs to be made a partner in the earliest stages of remediation work, including decisions on sampling strategies, so that public health concerns are identified and addressed as early as possible in the process. Currently, the public health assessments have very little impact on site remediation decisions. EPA and ATSDR both work at the same NPL sites but there is no formal or required linkage between the public health assessment and the remedial investigation/feasibility study (RI/FS). Similarly, EPA should be directed to involve ATSDR in their 5-year review of site closures to insure that public health concerns are addressed. There should also be better coordination of local, state, and federal entities with regard to superfund site activities, (e.g. public health assessments, site remediation).

Additionally, some modification of existing language is needed with regard to public health assessments. A full blown public health assessment may not always be warranted, but is required under existing statue. ATSDR should have greater flexibility in designing a more rapid and targeted response. Site reviews and updates may be an alternative.

In order for ATSDR to be a truly independent health advisor to EPA, it is important for ATSDR to have its funding separated from EPA. Currently, ATSDR is tied to the EPA budget process, with EPA budget examiners deciding not only the overall budget level that should be requested for ATSDR, but also the budget levels for individual activities. A mechanism needs to be found to reduce the bureaucratic process, to reduce staff time at both EPA and ATSDR spent on this matter, and to

allocate funds more efficiently to ATSDR. Direct allocation to and consolidation of ATSDR's budget within HHS is one possibility.

The reauthorization process will surely be an arduous task, particularly in light of the complexities of the Superfund program. ASTHO believes that changes to the Superfund program, as outlined above, will help to ensure that the purpose of Superfund is achieved: protection of the public's health.

Again, ASTHO appreciates the opportunity to present this written statement.

Testimony Regarding Health at Superfund Sites

It means a lot to me to be able to express what I have seen and dealt with during my 16 years of working with communities across the country that are impacted by toxics.

My own involvement began at a Superfund site in Gray, Maine in 1977. Activities at a nearby disposal firm caused contamination of our neighborhoods' well water supplies. It is also caused serious health problems. My daughter, then five, had dizzy spells so severe that she used to lose her sense of direction while walking and bump into furniture or walls. She constantly got so dizzy she would fall from her chair while eating dinner. I spent many a night up with her, rocking her, as she cried, "Mommy, my head hurts. Mommy, I can't breathe." Both my daughters suffered severe rashes, dizzy spells, kidney infections, headaches, and respiratory problems. My husband became asthmatic, requiring emergency treatment on several occasions. He and I both suffered with severe rashes and dizzy spells. I experienced temporary blindness and paralysis. I had a miscarriage, as did other women in my neighborhood. (The state later found the miscarriage rate to be 7.9 times higher than the national average) On Christmas Day, 1978, my infant son, Gregory, died. My second born son, Joshua, had abnormal liver function and seizures. Today at twelve, he continues to have seizure activity. Our doctor believes that during one of his seizures, when he stopped breathing, that slight brain damage resulted causing the continued activity.

Our health problems were the last thing that was considered by state or federal officials. And when a doctor from the Center for Disease Control finally came to Gray, more than a year after a safe water supply was given to us residents, and the route of exposure was removed, he told the press while drawing blood from the arm of my neighbor, "I don't expect to find anything." Later the state and the federal health agencies began another health study. In the middle of the study, the Agency for Toxic Substances and Disease Registry (ATSDR) pulled out of the study after disagreements with the state.

We all suffered serious health problems and some now, 16 years later, suffer the long-term affects of exposure, such as cancer and chemical sensitivity.

Since my experience in Gray, I have worked with hundreds of communities that are faced with similar threats. Memories that will remain with me forever, etched deep into my mind and soul, cry for those who are in power to learn the lessons repeatedly being taught us from these communities near Superfund sites.

I once stood at the grave of a young child in "Babyland", a cemetery in Jacksonville, Arkansas. I was holding the mother in my arms as she sobbed uncontrollably, yanking at the pain of my own loss. In that community of three Superfund sites, there are babies being born with deformities and birth defects. Too many children have died before their first birthday. At a meeting with the wives of military personnel at Little Rock Air Force Base, I listened to their horror stories—84 miscarriages and breast cancer.

I heard a young boy from New Bedford Harbor, Massachusetts, speak after standing on a chair that he pushed up to a microphone to tell EPA officials at an event attended by 1000 New England citizens, that he had leukemia and so did his friends. He said to them with that look of innocence and pain, "I don't want to die."

And in low income and minority communities across the country, people are even worse off. At Carver Terrace in Texarkana, Texas more than 80 African American families live not next to a Superfund site, but ON TOP of one. For many years, these families were left there to suffer the health problems similar to other Superfund sites, and to watch their families and friends die one by one. In Tuscon, Arizona at a Superfund site, Hispanic-American citizens are living with the effects of the cancer causer, trichloroethyene. The horror stories coming from across the country are endless.

The problem is not that money is being spent for nothing. The fact that federal health agencies assessments of health around Superfund sites turns up nothing, *does not mean that there is nothing wrong.* Believe me, there are health problems at

these Superfund sites. The problem is the design of the health studies, the fact that the money for ATSDR comes from EPA's budget (a conflict seeing as EPA is negotiating clean up with PRP's), the way that the federal health agencies get their initial information (from EPA documents and not the affected citizens), and that all our country's pollution laws are not preventative based. Until we begin to prevent pollution and exposure, until we STOP merely *monitoring and controlling* pollution, there will be a serious public health threat across this nation.

Hear the cry of my son that was too weak to be heard, so his mother continues to carry that, after 16 years, together with the cries of other children who needlessly die or suffer the health problems while living near these sites. This is a public health crisis that has gone too long unattended. People in power, who turn their backs on this problem may, as well be holding a gun to the heads of American children who live near these sites and pulling the trigger.

Superfund is a great tool, it has been extremely helpful at my own site. The polluters in this country should be held accountable for their careless lack of concern for our communities' health and environment. If anything, more money is needed for ATSDR to do their job in protecting the health of Americans living near these ticking timebombs. They need to be given whatever it takes to do their job and finally *adequately* address a most serious American public health threat.

On behalf of my son, and other children around the country who have lost their lives in this underestimated War With Toxics, I want to thank Congress for FINALLY taking a serious look at this issue. davis

Respectfully Submitted,

CATHY HINDS.

TESTIMONY OF ERIK D. OLSON, SENIOR ATTORNEY, NATURAL RESOURCES DEFENSE COUNCIL

I. INTRODUCTION

I am Erik D. Olson, a Senior Attorney with the Natural Resources Defense Council, a national non-profit organization with over 170,000 members dedicated to applying law and science for the protection of public health and the environment. We appreciate this opportunity to provide the Subcommittee with written testimony on the important subject of the ecological effects and natural resource damages caused by Superfund sites.

II. THE "FORGOTTEN HALF" OF THE SUPERFUND PROGRAM

The Superfund program's forgotten half, often referred to as a "sleeping giant," is the natural resource damage program, which was intended to be administered to protect and restore natural resources injured by releases of hazardous substances into the environment. Al is noted in section III of this testimony, the evidence indicates that at many sites across the nation, hazardous substance releases have not only threatened public health, but have caused massive injury to the environment. Often, these sites tend to most directly harm the ecosystem by disrupting wildlife populations or causing, for example, fish kills or pollution which impairs fish and wildlife's ability to reproduce or to thrive. Because EPA's Hazard—Ranking System (HRS) for rating the threat posed at Superfund sites has failed to adequately consider food chain contamination and wildlife or other natural resource impacts, many of the sites where ecological damage occurs may not be on the National Priority List (NPL). Moreover, even at NPL sites, environmental and ecological damage generally has received short shrift.

In large measure, the lack of adequate nationwide and local information on the ecological impacts of Superfund sites, and the lack of widespread recovery of natural resource damages, can be traced directly to three problems:

(1) In the 1986 Superfund Amendments and Reauthorization Act (SARA), Congress cut off the use of Superfund money for trustee agencies to assess the natural resource damages at Superfund sites (the authorizing committees, including this Committee, approved such funding, but the tax committee without fanfare tucked a provision in the tax section of the law, SARA section 517(c), prohibiting such use of the fund). The lack of adequate damage assessment funding has crippled this program. Agencies have been forced to scrape together funds to do this work either by begging polluters for the funds (and then being somewhat beholden to them for sharing data and giving them-a significant role in conducting the assessment), or by effectively robbing other program operating funds to pay for the assessments.

(2) The Interior Department has dragged its feet for over a decade in promulgating and revising its rules for assessing natural resource damages under Superfund. Originally due in 1982, the rules were not issued until 1986-87 after a lawsuit to force their promulgation. Today, about 4 years after a 1989 U.S. Court of Appeals decision striking down portions of its rules as illegally undervaluing natural resources damaged by Superfund sites, Interior still has not revised them to provide guidance to state, federal, and Native American tribal trustees to assess damages to natural resources. These are the infamous rules that, for example, said fur seals killed by a spill or release were worth $15—the market value of their pelt. Thus, today, nearly 13 years after Congress mandated the promulgation of the rules and over a decade after the legal deadline for their promulgation, Interior still has not issued legally valid damage assessment rules to help trustees do their job. This history is the primary reason that Congress, in the 1990 Oil Pollution Act, delegated the requirement to issue rules for natural resource damages from oil spills to the National Oceanic and Atmospheric Administration rather than Interior.

(3) The trustees, EPA, and Justice Department generally have failed to make assessment and recovery of natural resource damages a high priority. This is in part because of the lack of assessment funds and the lack of Interior Department rules, but in many cases because of ignorance, apathy, discomfort, or, past hostility to expending significant resources to look at damage to natural resources from Superfund sites. While there are important and notable exceptions (for example, the National Oceanic and Atmospheric Administration has made this issue a relatively high priority), major land management agencies, and in particular the Interior Department, have failed to dedicate adequate resources and priority to this program. Even the most aggressive trustees such as NOAA have suffered from chronic inadequate assessment funding. And while recently Interior has created a small pool of funds to do assessments, this money and the staff simply is inadequate to accomplish the task.

For example, the centerpiece of Interior's effort is a series of so-called "Preliminary Natural Resource Surveys," generally done at EPA's behest, when EPA is considering moving or settling a case at an NPL site. Based upon these PNRSs, Interior often has failed to pursue or has legally waived claims to natural resource damages. Yet these surveys generally rely upon little more than a "desk top review" of existing data—which often are sparse to almost nonexistent—of the ecological impacts of Superfund sites. Generally, information collected by EPA was collected for documenting human health problems rather than natural resource injury. These Interior reviews generally cost a small amount and do not involve field investigations into the impacts of the site on natural resources. Moreover, Interior is doing little to our knowledge to assess possible damages to natural resources at non-NPL sites. Thirteen years after the program was mandated, Interior apparently has acted as lead trustee and initiated only a handful of full-scale assessments of natural resource damages at the thousands of named and potential Superfund sites in the nation, although the Department has assisted other trustees, notably NOAA, in assessing damages at Superfund sites where other agencies are acting as the lead trustee.

Unless these three problems are addressed, the natural resource damage program will remain largely an unfulfilled promise to the American public, and widespread injuries to the nation's fish, wildlife, and other natural resources from toxic materials will remain unrestored.

III. THE HARM TO THE ENVIRONMENT FROM TOXIC RELEASES

Despite the problems noted above, in several cases serious damage to the environment has been documented from toxic releases. For example:

- At the Iron Mountain Superfund site in California, massive fish kills, including kills of millions valuable salmon, have been linked to releases of heavy metal contaminated waste into the Sacramento River. The bottom-dwelling "benthic" community of the aquatic ecosystem in the affected area has been altered. Fish disease, migration disruption, and decreased ability of fish to reproduce have been documented. This contamination reportedly has threatened much of what has been estimated to be a $200 million salmon fishery off the California coast. The salmon population in the river appears to be on the brink of extinction for this and other reasons.
- At the New Bedford Harbor Superfund site Massachusetts, PCB contamination from releases a local electronics firms caused widespread damage of the Acushnet River, New Bedford Harbor, and a significant part of Buzzards Bay. The PCBs have accumulated in fish, birds, lobsters, and other organisms. New Bedford, the fabled seaport described in Melville's Moby Dick, has lost important

local fishing grounds to closure due to the contamination. According to economic damage assessments, the New Bedford area has lost over $65 million dollars in property values, recreational use, commercial fishing, ad other uses of local waters. The PCB contamination caused the shutdown of 18 square miles of a local lobster fishery, and has caused long lasting food chain contamination with highly persistent PCBs. The National Oceanic and Atmospheric Administration initially settled its claim against key polluters for natural resources damages at the site for just $3 million, but that settlement was struck down after a challenge by the National Wildlife Federation. Later the case was settled for over $100 million in natural resource damages and cleanup costs, up to $30 million of which is for natural resource damages.

- At the Bunker Hill site in Idaho, a lead smelter and associated activities caused widespread contamination of 21 square miles the local environment with lead and other heavy metals. According to federal reports, over 70 million tons of waste were disposed at the site. In addition to causing lead poisoning of local children, toxic emissions from the site have denuded the local vegetation, contaminated hillsides, and polluted a river for 65 miles with heavy metals, including lead. Until recent cleanup activities, the Coeur D'Alene River had for years been totally devoid of fish below the key discharge point at the site. Impacts on migratory birds such as tundra swans, ad aquatic life have been well documented.
- At the Commencement Bay site in Washington state, a smelter, battery recycling operation, and other industrial activities have caused widespread contamination of land and sediments with lead, mercury, and other heavy metals, PCBs and other organic toxics. Commencement Bay supports an important fishery, and an estimated 15,000 people have been exposed to pollutants due to eating fish contaminated by the site. The County has now advised that Commencement Bay bottom fish and shellfish not be consumed. Liver lesions in fish, altered benthic life, bioaccumulation of metals and organics in fish and wildlife, and chronic impacts on salmon from exposure to these toxics have been documented.
- Al Dr. Theo Coburn of the W. Alton Jones Foundation testified before this Committee on March 24,1993, there are numerous toxic chemicals being released into the environment that have subtle and insidious effects on animals, including damaging effects on endocrine, immune, and nervous systems of wildlife as well as humans, not principally in the generation exposed to the chemicals, but in that generation's offspring. For example, some animals such as mink in the Great Lakes region, exposed to certain relatively low levels of certain industrial toxics, cannot reproduce. Some birds become reproductively incompetent—male offspring develop female sex organs. Other examples of such non-lethal but highly significant multi-generational problems abound.

There are numerous other sites with massive documented natural resource damages, ranging from Santa Monica Bay off the coast of Los Angeles, which has suffered serious toxic pollution from DDT and other chemicals, to Waukegan Harbor, Calumet, and numerous other sites on the Great Lakes where PCB and other contamination has polluted local natural resources. However, because of the lack of comprehensive investigation into this problem, it is clear that we are only seeing the tip of the iceberg. It is critically important that resources and staff are made available to trustees to conduct detailed assessments of damages at Superfund sites where significant natural-resource damages-may have occurred.

IV. CONCLUSION

As can clearly be seen simply by scratching the surface at a handful of Superfund sites, the release of toxic substances into the environment can and has caused serious disruption of the ecosystem, with major economic repercussions. Funding for conducting damage assessments must be provided. Only through the aggressive pursuit of damages from polluters after full assessments of damages are done, can the public be assured that the injured natural resources are restored or replaced, or that resources equivalent to those irreparably injured are acquired, and that lost use and nonuse values of the resources are recovered, to make the public and environment whole. Without this, polluters not only will escape paying for the damage they have done, they will have effectively been subsidized by being allowed to use and destroy public natural resources to their own benefit. Polluters or potential polluters who know they will not have to pay for these damages will not have the incentive to take measures to prevent current and future actions that may cause ecological damage.

SUPERFUND REAUTHORIZATION

WEDNESDAY, MAY 12, 1993

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON SUPERFUND, RECYCLING, AND
SOLID WASTE MANAGEMENT,
Washington, DC.

EPA TESTIMONY

The subcommittee met, pursuant to recess, at 10:08 a.m. in room 406, Dirksen Senate Office Building, Hon. Frank R. Lautenberg [chairman of the subcommittee] presiding.

Present: Senators Lautenberg, Durenberger, Smith, Kempthorne, Warner, Baucus, Boxer and Metzenbaum.

OPENING STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator LAUTENBERG. Today we will continue our series of intensive hearings to review the operation of the Federal Superfund law, the cleaning-up of toxic waste sites, and to prepare for its reauthorization.

The Superfund program is one of the most controversial and often criticized of Federal environmental programs. My subcommittee will be devoting much of its time this year to reviewing this important law and trying to decide how it can be improved. As one the toughest critics of the program's functioning over the past several years, I am eager to work with President Clinton and Administrator Browner to turn around a program that has been beset with problems, both administrative and statutory.

While there has been a recent ramping up of clean-up efforts, largely because of the enforcement-first strategy that I was successful in getting EPA to adopt in 1989, there remain numerous administrative reforms and legislative changes as well. They will be needed to realize the program's full potential. As we move into the reauthorization of Superfund, I am going to be guided by four core principles to reform this law.

First, we need to speed up clean-ups, and to insure that they are performed equitably regardless of what ethnic groups or income classes live near-by, and done safely, so workers and neighbors don't face exposure just from the clean-up activities alone.

Second, we need to spend less money on lawyers and more money on actual clean-up.

Third, we need to ensure fairness, particularly for small businesses and municipalities, while insisting that polluters stay liable for cleaning their messes.

Finally, we need to eliminate the waste, fraud and abuse that wasted taxpayer and industry dollars, as well slowed needed clean-ups.

I am pleased that a broad array of environmental, civil rights, State environmental commissioners, municipal, labor and taxpayer groups endorse these principles and are committed to seeing them implemented in the coming months of legislative debate. I look forward to the support of the administration, and of others on this committee and in the Congress, to see to it that the tough reforms necessary are made.

As we go about making these changes we have to keep our eyes focused always on what is really at stake for the health of our citizens. We have a duty to make the tough decisions to make the changes that need changing, but we also have a duty to the 41 million Americans who live within four miles of a Superfund site, and whose health and lives may depend on its success.

We heard from just a few of those citizens last week in a hearing before our subcommittee. I urge my colleagues to keep those interests at heart as we go through the process in the coming months.

Today we are will hear from EPA Administrator Carol Browner about the Clinton Administration's views on the program that they have inherited. I am particularly interested in the administration's views on its role in developing reauthorization legislation and policies that can be implemented quickly by the agency.

We have a lot of work ahead of us to turn the program around, and to more quickly, efficiently, and comprehensively clean up the toxic waste sites of our Nation. As we learned at our hearing last week, the threats posed by these sites make it a question of how, not whether, we clean up these sites. We have to keep this goal in mind as we begin our work on reauthorizing the program.

We can't just criticize. The fact is that there have been a number of successes with the Superfund program. Almost all of the sites listed on the National Priority List, have been tended to in one way or another. They have all had some initial work done. We are starting to see final clean-ups come into place. There is a lot of remedial work going on. We have to keep that in mind as we review this.

We also have to continue to maintain a principle. That is that those responsible pay the price for clean-up. We have over the years collected over $7 billion from responsible parties. That tells us that part of the program has worked well and effectively. So, we are going to begin the process in this year of reviewing all of the parts of the Superfund law that need review.

I invite comments, information, and criticism from all interested parties as we go through the process. This morning I am joined by three colleagues. One is the chairman of the Environment and Public Works Committee, Senator Baucus, with whom I have worked for a long time since, I have been on this committee.

The other is the ranking member of this subcommittee, someone who understands environmental law very, very well. We don't

always agree, but we do work well together in terms of trying to make the laws better, if necessary, or change them when required.

I am delighted to see Senator Boxer, a new member of this subcommittee with us as well. She has a profound interest in the environmental justice side of things, and made that clear yesterday in the hearing that we had.

With that I would invite Senator Durenberger to make his opening comments.

OPENING STATEMENT OF HON. DAVE DURENBERGER, U.S. SENATOR FROM THE OF MINNESOTA

Senator DURENBERGER. Mr. Chairman, thanks.

Let me begin by endorsing the principles that you laid out. There may be others, but I thought that was an excellent outline. I join you in welcoming Administrator Browner to the hearing.

Superfund, as we know, is a program with problems. It has a troubled history, but I want to say I consider myself a friend of Superfund. I have tried over the years to preserve its core principles, while trying to support reforms that would make it better.

Protection of our Nation's groundwater resources has been one of my primary interests as a member of this committee. I think Superfund is principally a groundwater clean-up program, and so I am going to continue to be a friend of Superfund.

The complaints about Superfund will come under four headings. First, it takes too long to clean-up Superfund sites. The average time from the listing of a site to the completion of construction is now 9 years, and increasing. The program seems, both to the communities affected by Superfund sites and the parties responsible, an interminable disruption in the regular order of life.

The second complaint is that it costs too much to clean up Superfund sites. I think the current average cost for a Superfund clean-up is $30 million per site, and that, too, is growing. The final tab is estimated at anywhere between $27 billion and $300 billion.

It is not that remedies fail to meet their objectives, and therefore money is wasted. Rather, the complaint is that Superfund clean-ups go beyond what is necessary to protect health and the environment. Said another way, the money invested in site clean-ups could provide more health and environmental benefit if it were spent on some other projects.

The third complaint is that too much of the money is spent on study, litigation, administrative overhead, which we will characterize today as transaction costs. Even at sites where no dispute with an insurance company is involved, an amazing 20 to 40 percent goes to lawyers and studies rather than for clean-up.

The final complaint—the chairman accented this—is that the Superfund is just unfair. The joint-and-several liability scheme is seen as un-American by many in the business community. The right-of-contribution suits, which must necessarily be a part of the joint-and-several liability scheme is now being abused by many Superfund litigators to intimidate communities that their clients have polluted.

Everybody has their own theory about the causes of these problems. Some blame them on the liability scheme; others think it is

the clean-up standards and other criteria that guide remedy selection that are the root of the problem.

To some extent the problem is plain old bad management. The program grew by leaps and bounds in early days, and the government has never had the talent in the quantity, or management tools of the quality necessary to keep pace with expectations.

Superfund is the one environmental program, I understand, that requires reauthorization. It is supported by a dedicated tax, and must be extended by an act of Congress. The precise timing for that extension is unclear. The tax revenues rise and fall with the profitability of our business community, but it will be upon us soon.

It is going to take more than nickel and dime reforms to convince the Congress that the Superfund program ought to be extended. It is time for radical surgery to save the patient. We will need to offer fundamental changes in the law. That is a tremendous responsibility for this subcommittee, and for the committee.

I will look forward to working with you, Mr. Chairman, and other members of the committee, and with the administrator and her staff at EPA, throughout the reauthorization of Superfund.

Senator LAUTENBERG. Thank you very much, Senator Durenberger.

Senator Baucus?

OPENING STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM THE STATE OF MONTANA

Senator BAUCUS. Thank you, Mr. Chairman.

Administrator Browner, I don't have to tell you how important this hearing is, and how important the remaining hearings will be, and how important it is that we make some sense of it, and get some control over this program.

As the chairman of this committee, I have intentionally delayed taking a serious look at the major reauthorizations that are this committee's jurisdiction for several reasons.

One, because there is a perception and I think a fairly valid one, that a lot of our environmental laws just don't work very well with each other; they are not well coordinated.

Second, some of the administrative regulations that come out of these statutes may be reaching diminishing returns, in some respects.

Accordingly, I scheduled hearings on various subjects to try to assess the status of our environmental statutes. One hearing was called taking-stock. That is taking stock of where we are, which statutes work, which ones don't work, which provisions of which environmental statutes in our country work, which ones don't, and what do we do about it? Let's hold back a little bit, and get a little bit of perspective, and take note of where we are.

Another set of hearings was Environmental Technologies. It is my belief, and I think it is a belief shared by you, and by a good number of people in our country, that we have an opportunity at this point in our country's history to focus more on the development of environmental technologies, not only in the tail-pipe, but preventive technologies and life-cycle process technologies for a

whole host of reasons: It's jobs, it's the future, where we have the technology, the more efficient we will be, the more we will be able to market these technologies overseas. That will help improve our adverse balance of payments and trade deficit that we have with other countries.

In the same vein, two of our environmental statutes, among several that are up for reauthorization, are Superfund and Clean Water. I scheduled this committee to mark up Clean Water this year, and hopefully, Superfund also. I mention Superfund because there is such discontent in the country revolving around the program. There is a need to address, not only the perceived, but the real deficiencies in the statute.

We also know that not a lot of time was spent by the Congress in examining how to address Love Canal problems and other toxic dump sites that existed around this country, though the press highlighted the problems that occurred over 10 years ago, appropriately. Congress then reacted very quickly, not too quickly in addressing the problem, but too quickly in not thinking through the right approach to solving the problem.

It is an example of another problem we have in our country, namely when there is a problem we just rush pell mell to pass a statute to deal with that specific problem. We don't think about how it relates to others.

My main point is this: I'd like you, during your testimony this morning and in answer to questions, to try to weave in, as much as you possibly can, how, when we are improving Superfund, we coordinate our improvements with other environmental statutes; how we address developing environmental technologies, improving upon the development environmental technologies; and how we set priorities; and how we do a better job of fitting the problem with the remedy.

The first subcommittee hearing on Superfund was addressing that subject, that is: Is there a problem? Are there sites that need to be cleaned up? Obviously, there are; and they do have to be cleaned up. We are having another set of hearings addressing different aspects of this.

I'd be very interested in your answers to those questions. In addition, I'd be interested in knowing whether the administration is going to submit legislation, or if not that, the degree to which the administration will work with this committee. We were able to pass the Clean Air Act amendments a few years ago, basically, because we had the very close cooperation of the President. Without that we would not have been able to pass that reauthorization.

I know we have your support, but I'd be interested in knowing what the administration plans to do.

Thank you, Mr. Chairman.

Senator LAUTENBERG. Thank you very much.

Next we will hear from Senator Boxer.

OPENING STATEMENT OF HON. BARBARA BOXER, U.S. SENATOR FROM THE STATE OF CALIFORNIA

Senator BOXER. Thank you very much, Mr. Chairman.

I want to commend the leadership of the committee and the subcommittee for this reasoned approach that we are taking to these crucial issues that are so important to the health and safety of our people.

I am very happy that I was able to attend the first hearing that Senator Lautenberg held on this when we heard from people who actually live in and around Superfund sites. We heard praise for the program, and we heard criticism of the program, which is fair. I think that reflects what we are dealing with here.

Let me just say that legitimate criticism of the Superfund is certainly warranted. We need to learn from our mistakes, but I just hope, Mr. Chairman, that we are not going to see the problems associated with this program elevated to such a degree that people will try to scuttle the program. That is something that, I think, would be tragic, because of the importance of Superfund.

I think it is important to look at the problems, among them the amount that Superfund spends on so-called transaction costs, and the relatively small amount that actually goes to cleaning up the sites. I hope that Administrator Browner will discuss that with us.

The amount of money that gets spent on litigation, relates to the various issues arising from the question of who is liable for Superfund clean-ups. Nothing makes people more angry—and I like lawyers a lot. I happen not to be one, but I know a lot of them, and I like them—but nothing makes people angrier than to learn that more money is going to lawyers than to clean up the site. We need to address this issue.

I also think we need to address the issue, Mr. Chairman, of prioritizing sites. One of the panelists at the last hearing spent a lot of time and effort trying to prove to EPA that there wasn't a problem in a certain Colorado region in Aspen. They got outside consultants and scientists to say there wasn't a problem, and yet it still seems to remain a big argument. It puzzles me as to why we would move ahead with a site like that, and ignore other sites, by the way, that might be in the inner city, as the Chairman said, or near the inner city. I worry about the problems that we are facing in terms of the economic justice issues that were cited before.

In conclusion, I really am pleased that you are here again. This is getting to be an everyday thing. You were here yesterday, as well, because I think that the members of this committee want to work together to make sure we have the best possible program, and that we can look our constituents in the eyes and tell them, "We looked at the problems. We didn't ignore them. We fixed them. Now, we are going to reauthorize this program in a way that will meet our needs."

Thank you, Mr. Chairman.

Senator LAUTENBERG. Thank you very much, Senator Boxer.

Next is Senator Smith.

Senator SMITH. Thank you, Mr. Chairman.

I do not have an opening statement. I welcome Ms. Browner again, and also I would like to say that I associate myself with the remarks made by Senator Durenberger, especially in the area of risk assessment. Just reauthorizing a program without making adjustments would be a serious mistake. Senator Boxer, hopefully, you and others will understand that those of us that are being crit-

ical are trying to help the program. There is no point in reauthorizing a program that is going to cause more problems than it straightens out.

Senator BOXER. Will the Senator yield, since he mentioned my name, for a minute?

I think it is important to note that I appreciate solid criticism of the program. No one has been showing that leadership more than our chairman. I think that criticism that is just and warranted is going to help us move this program forward.

Senator SMITH. That is what I am saying. I just want to be on record as saying that the idea here is not to scuttle the program. The idea is to make it better, but we ought to not draw any parameters in that regard, as far as I am concerned. I think we ought to do what we have to do to make the program right, so that it does, in fact, deal fairly with those people who, in many cases, are unfairly left with the burden of clean-up, sometimes, when other PRPs are not identified, and so forth. But we will be getting into that in the questions.

Thank you, Mr. Chairman.

Senator LAUTENBERG. Thank you very much, Senator Smith.

Senator Kempthorne?

OPENING STATEMENT OF HON. DIRK KEMPTHORNE, U.S. SENATOR FROM THE STATE OF IDAHO

Senator KEMPTHORNE. Thank you, Mr. Chairman.

I appreciate this opportunity to attend the hearing as we begin the work of reauthorizing the Comprehensive Environmental Response, Compensation, and Lability Act.

I am convinced that the statute, as constructed, is not permitting us to reach our goal, which is the clean-up of those toxic waste sites that pose the greatest threat to human health, and to the environment. I believe we have chosen the most costly way imaginable to go about the clean-up of these toxic sites. Despite some efforts to re-cast Superfund as a jobs program, it is not a replacement for the productive investments that could be accomplished if the unnecessary, wasteful spending in the Superfund were used elsewhere.

In October of 1992, EPA provided a total cost estimate for cleaning up the sites currently listed on the National Priorities List, and the additional 2,000 that it expects to list. That figure was $63 billion. Much of that will come from the private sector, from potentially responsible parties. A good chunk of it will apparently go to lawyers and others not directly engaged in the clean-up of any Superfund sites.

I hope that in Congress' efforts to reauthorize Superfund that we will spend some time figuring out how to structure the program to maximize environmental production, but to minimize the costs. The measure of our success will not be how much money we have spent in cleaning up the Superfund sites, nor how many sites we can get listed. It will be measured by actually going out and cleaning up the most serious sites in a responsible way. toward that end, I believe that there are some crucial issues that this subcommittee and EPA should look at.

First, I suggest, and I believe, that we need to look at setting qualitative standards for the health and scientific data to be used in the listing of sites on the NPL.

Second, I believe we need to achieve a better match between the remedial methods chosen and the clean-up goals for a given site. There is some evidence to suggest now that we don't always put our money in the most effective and most cost-effective remedial tools.

Third, I believe we need to develop better guidelines for the clean-up standards to be applied, taking into account the likely future purposes to which the land will be put.

Finally, I believe we need to reconsider the liability scheme that we have used to place the cost burden on those responsible for the waste sites in the first place.

So, Ms. Browner, I know that you have tremendous challenges out there, but we are a team. To date, I think you have been doing an excellent job. I continue to pledge my support to you.

Senator LAUTENBERG. Thank you very much.

Administrator Browner, we are delighted to have you here this morning. Everyone has pledged their cooperation. It will be interesting to see what the definitions are, but you have taken on a tremendous assignment. You have the credentials to do it. This will be one of the assignments that is going to consume a fair amount of your time and attention. You have already given a significant part of that.

We look forward to your testimony, and to be working with you over these next months, perhaps a couple of years, to get Superfund reauthorized.

Senator BAUCUS. Not a couple of years.

Senator LAUTENBERG. Mr. Chairman, I will usurp my right as chairman of the subcommittee, and cooperate with you, the Committee Chairman. One thing I am sure that you and I can agree on, as we often do, is that we want this review to be as thorough as it can. If we can get this done before the expiration date of either the funding or the authorization period, then I think that will have been an acceptable job, Mr. Chairman, as long as we are thorough in our review. I intend to be.

Senator Chafee has submitted a statement for the record, and, without objection, that will be done.

[Senator Chafee's statement follows:]

PREPARED STATEMENT OF HON. JOHN H. CHAFEE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Mr. Chairman, I appreciate having the opportunity to hear today the testimony of Administrator Browner concerning the current state of the Superfund program, and her ideas about how to improve that law.

We have now had over 12 years of experience with the Superfund program. It is clear that it is a program with some very serious problems. We have spent billions of dollars with very little to show in the way of results. Specifically, we find that only about 10 percent of the 1200 sites on the National Priorities List have been cleaned up, and that there are potentially thousands more sites that could be added to the list in the future. In addition, we are finding that a large amount of our private and public resources are being spent on fighting over who is liable and for how much at a particular site.

What is perhaps of most concern to me, though, is the way that the Superfund program has essentially frozen economic redevelopment of contaminated sites in my

State and many others. We simply must find a way to clean up old industrial sites and get them back into productive use, and maintain our greenfields for future use and enjoyment.

Some supporters of the Superfund program say that it is still fundamentally sound, that it only needs minor "tinkering". I strongly disagree. This program needs a complete overhaul from top to bottom.

Administrator Browner, your boss, the President of the United States, has pointed repeatedly to the Superfund program as an example of an extremely wasteful program that benefits lawyers more than anyone else. You are now charged, as are we, with performing a complete review of Superfund, and with developing proposed amendments to the law. This is a daunting task indeed. But, I view it as an excellent opportunity to put this program on the track originally intended for it: to eliminate immediate risks to health and to clean up sites to a protective level that also allows rapid economic redevelopment, with a minimum of wasteful spending.

Ms. Browner, there will be many pressures on you from every interest imaginable to support this or that change in the law. This is a program that produces strongly-held views from all corners. If I may offer you some advice as you begin this process, it is to conduct a complete review of the program, with a full airing of its failures as well as its successes. And, in the end, take the opportunity to provide much-needed leadership on this issue.

I appreciate your coming before us to testify today. I would however, request that you commit at this time to return in the fall to testify again before this subcommittee, after we have completed the other hearings on our schedule, so that we may have the benefit of your views after you have had time to complete your review of the program.

Thank you, Mr. Chairman.

Senator LAUTENBERG. Administrator Browner, we look forward to hearing from you. Please go ahead with your testimony.

STATEMENT OF HON. CAROL M. BROWNER, ADMINISTRATOR, ENVIRONMENTAL PROTECTION AGENCY

Ms. BROWNER. Mr. Chairman and members of the subcommittee, thank you for the opportunity to appear today to discuss Superfund.

I think we are all well aware that Superfund is one of the country's most ambitious environmental programs. This law marked the first attempt by any Nation to provide a comprehensive program to respond to chemical accidents and emergencies, and to clean up sites contaminated by hazardous chemicals.

To meet these ambitious goals, Congress provides EPA with an annual Superfund budget that dwarfs virtually all other EPA programs. The Fiscal Year 1993 Superfund budget is $1.5 billion, almost 22 percent of our total budget. In addition to the money made available throughout the Congress for us, millions more are being spent by state and local governments, private companies, and other parties responsible for cleaning up hazardous waste sites.

We are meeting today to begin the process of addressing critical questions. Are we getting full value for our money? Is the Superfund program structured and administered as well as it could be? Are communities and the environment being protected from the risks posed by hazardous chemicals at the least possible cost? Is EPA reaching quick, consistent, and reasonable decisions? How can EPA, state governments, local communities, private businesses work together more cooperatively as partners in cleaning up hazardous wastes?

In the last 12 years we have learned much about analyzing and comparing risks at specific sites. We have developed new, more effective, and less costly clean-up technologies. We have become

much more sensitive to the value of local community involvement. We have also learned that the scope and complexities of the problems are far greater than originally envisioned. Most important, after 12 years, we know that the Superfund program is still flawed, and that we have to improve it if we are to fulfill the promises made in 1980.

It is appropriate, I believe, after 12 years, that we pause and take stock of this vitally important program. This morning I would like to share with you my sense of what is working, what isn't working, and give you an overview of what the Clinton Administration and EPA intend to do to make Superfund a more efficient, effective program in the future.

This country's multi-billion dollar investment in short term emergency response and long term site clean-up undoubtedly has reduced the risks posed to human health and natural resources. EPA has taken more than 3,300 removal actions at nearly 2,600 sites. Known immediate threats have been eliminated at all National Priority List sites.

In addition, EPA assesses on a biannual basis all NPL sites to determine whether additional removal actions are necessary. Long term remedial clean-up is progressing or completed at numerous sites across the country. Of the more than 1,200 sites currently listed on the NPL, and the 54 sites previously deleted from the NPL, EPA has completed construction-phase of long term clean-up at 164 sites.

At some sites, like those with contaminated ground water, treatment systems are in place, but will need to continue operations for a long time before clean-up goals are met. Remedial investigations and feasibility studies are underway or completed at almost 1,200 sites, remedies selected at 800, remedial designs underway or completed at nearly 700, and remedial actions underway or completed at nearly 500 sites.

Applying Superfund's liability provisions, EPA's enforcement efforts have achieved over $7.4 billion in clean-up commitments from potentially responsible parties. Potentially responsible parties now are committed to do 72 percent of new Superfund remedial action work. This is up from 32 percent in 1988.

The existence of Superfund has begun to change corporate and municipal behavior by giving an incentive for voluntary actions. Because private and public parties now are more aware of the problems and costs associated with the generation and disposal of hazardous wastes, they are developing new, innovative ways to prevent pollution before it is generated and minimize pollution that cannot be prevented completely.

Moreover, because the presence of hazardous chemical wastes can impair the value of businesses or corporate property, more and more private companies are conducting voluntary clean-ups prior to the sale of corporate assets. In these cases voluntary actions in the private sector are providing additional indirect environmental benefits beyond those attained by Superfund directly.

Superfund has also spurred technological advances. Both the public and private sectors have invested substantial funds to develop new and more effective, less costly hazardous waste control and clean-up technologies. EPA has identified over 150 innovative tech-

nologies now being used to treat ground water, soil, sludge, and sediments.

EPA is not working alone in achieving these results. Superfund has spurred the development of many state clean-up programs. Under Superfund and their own laws, states have contributed enormously to the clean-up of our national hazardous waste problems.

Clearly, the people of the United States have derived a number of benefits from the implementation of Superfund over the past 12 years. For example, the most serious threats to local communities at contaminated sites have been abated. Many sites are being restored to productive use. Investments in advanced clean-up technologies are helping reduce clean-up costs and open export markets to U.S. companies.

It is just as clear, however, that we are paying a very high price for these benefits. We are paying a high price in terms of administrative and clean-up costs incurred by EPA, and a high price in terms of the transaction and clean-up costs incurred by companies, state, local governments, potentially liable for contamination.

We are paying a high price in terms of uncertainty and wasted time. We are paying a high price in terms of the basic fairness or unfairness of the program.

Finally, we are paying a high price in terms of the anxiety and frustration of local communities concerned about delays in cleaning up contaminated sites.

I would like to mention some of the specific criticisms that have been leveled at the Superfund program.

The pace of clean-up in many instances has been too slow. The average time from an initial remedial investigation feasibility study to completion of a remedial action project at a Superfund NPL site is 10 years. Several years often elapse between the preliminary assessment and the remedial investigation feasibility study. Superfund, generally, is criticized for spending too much time studying sites, and at some sites studies of complex contamination problems resulting from co-mingled wastes have stretched on for years.

The EPA/State relationship has been strained in some areas. The law assures state involvement in all aspects of Superfund: Identification of the sites, enforcement, negotiations, settlements, remedy selection. The law also requires clean-ups to meet the requirement of state environmental laws more stringent than Federal requirements. Moreover, states are responsible for paying a percentage of the costs of remedial actions paid by the trust fund, as well as the costs of maintaining remedies after they are constructed, for example, operating a groundwater system that could last for more than 20 years.

Inevitably, this sharing of responsibility and costs has led to disagreement on issues such as remedy selection, enforcement, and long-term state operation and maintenance costs at Superfund sites.

Significant concerns have also been raised about the Superfund liability, principally as it relates to transaction costs and fairness. The President has expressed his concern that too much money is going to lawyers and not enough to clean-ups. A study by the Rand

Corporation indicates, for large industrial firms, transaction costs have represented 20 percent of Superfund outlays at NPL sites.

This percentage will probably decline as sites emerge from the negotiation stage, where we would expect relatively higher transaction costs, and clean-up actually begins. Nonetheless, a large drain of dollars to lawyers and consultants is a troubling aspect of the current Superfund program.

In addition to transaction costs, small waste generators are concerned that the law treats them unfairly, forcing them to contribute more to Superfund clean-up than is justified by their proportional contribution to wastes at contaminated sites.

An area of special concern relates to the liability of generators and transporters of municipal wastes. Studies indicate that ordinary household waste may contain small percentages of a variety of hazardous substances. Although EPA as a matter of policy does not pursue municipal solid waste generators or transporters, other responsible parties are not prevented from pursuing them for clean-up costs. The issue raised by these lawsuits has given rise to a major debate on the fairness of municipal liability.

The Superfund program also has been criticized for taking longer to clean up sites and providing less protective remedies in neighborhoods with low-income or ethnic minority populations. Although concerns about environmental justice are not unique to Superfund, economic and ethnic fairness within the Superfund programs are matters of great concern to EPA. We are currently gathering data on the characteristics of communities surrounding Superfund sites to determine whether in fact the program has disproportionate impact on disadvantaged communities.

The reauthorization of Superfund gives Congress, the Clinton Administration, EPA, and the public the opportunity to re-evaluate how the program has worked for the past 12 years, and to make changes that will help Superfund work better in the future. The Administration is committed to making changes needed to improve Superfund, both administratively and legislatively.

At this time, I see four distinct, yet inter-related steps in this process of change.

First, the creation of a new NACEPT committee. Second, administrative revisions. Third, Superfund data base improvements, and fourth, assessment of legislative options for improving Superfund. I would like to speak to each of them briefly.

NACEPT: In order in insure that EPA is fully informed about the views of outside parties, we are creating a new committee within the existing National Advisory Council on Environmental Policy and Technology, NACEPT.

NACEPT is an important group to EPA, and its Superfund committee will be made up of representatives from state, municipal governments, private industry, environmental groups, local community organizations, and universities. I am asking that this NACEPT committee, led by John Sawhill, initiate a broad public dialog on how Superfund can be improved. This dialog will involve all stake holders inside and outside of government.

I expect this committee to hold a series of public meetings this summer. Then, as soon as possible, it will present me with its assessment of available options, both administrative and legislative,

for improving Superfund. The EPA staff will work closely with the committee in identifying options and gathering information on the program.

Administrative revisions: I have created an EPA working group, headed by the Deputy Administrator to examine different actions the agency could take on its own to improve Superfund. This work group will look at ways to enhance fairness and reduce transaction costs, accelerate clean-ups, enhance public participation and address environmental equity issues, encourage technology development, clarify clean-up goals, improve remedy selection, and strengthen the roles of states.

This group will also oversee and evaluate implementation of several ongoing initiatives to improve Superfund, including the Superfund Accelerated Clean-up Model, which establishes a continuous site assessment process, and encourages early action to eliminate or reduce risks and insure clean-up of long term environmental problems. We have 13 pilot projects currently underway. We expect to be able to move to full implementation in Fiscal Year 1994.

The presumptive remedy initiative will help streamline and accelerate remedy selection at sites that have similar problems. Use of presumptive remedies will allow us to reach remedy decisions much more quickly at a lower cost.

The compliance monitoring and enforcement initiative will strengthen EPA's post settlement efforts to assure responsible party compliance with order and decrees.

EPA's cost recovery initiative will improve cost documentation, develop cost recovery cases that maximize returns to the trust fund, and reduce transaction costs by limiting the number of cost recovery issues that can be litigated.

Third, Superfund database improvements: EPA is taking steps to improve its Superfund databases. We recognize the need to collect reliable, consistent data that will allow us to analyze operation of the Superfund program and assess results. The available data are not sufficient to analyze program strengths and weaknesses, risks reduced, and costs. Accordingly, we are working with outside groups to develop a plan to strengthen our databases.

Finally, legislative options: We will work closely with this committee and the House to analyze and provide whatever information is necessary to develop appropriate legislative solutions. We look forward to that relationship, one I think that has already begun, and can be a very positive interaction between the administration and the Hill.

I want to add a specific word about liability. I think it is important that in any amendments to Superfund that we recognize and preserve the principle of site-specific polluter-pays liability. The parties that contribute to the contamination should be responsible for the clean-up. We are open to suggestion on ways of changing the operation of the current liability scheme in order to improve fairness and reduce transaction costs.

Today, more than 12 years after the enactment of Superfund, the job we face cleaning up hazardous waste sites seems more formidable than ever. Even though hundreds of sites have been cleaned up over the past decade, thousands more have been identified. Besides the sites already listed under Superfund, many more may be in

need of some form of remedial action. The Superfund program as we know it today poses a huge challenge and huge costs.

Despite what we have learned about administering a large, national clean-up program, many more questions remain to be answered. What is the most effective role state governments could play? Can we assess liability more fairly? How can we reduce transaction costs? How can we improve and speed up the remediation of sites owned or operated by Federal and municipal government? How can we increase the benefits that result from every dollar spent on Superfund clean-up?

In the same vein, the debate on Superfund reauthorization must consider the issue of natural resource productivity and lost economic opportunity resulting from the contamination of natural resources. The Congress must clarify the priority to be given to natural resource values when sites are selected for remediation and when clean-up levels and technologies are determined.

Also at stake in this reauthorization is the issue of environmental justice. We are seeing more and more evidence that economically disadvantaged, ethnic minorities are bearing a disproportionate share of environmental risk in this country. As Superfund is reauthorized, we must ensure that the economic and health interests of minorities are given proper consideration when sites are selected for remediation and when clean-up levels and technologies are determined.

Because so much is at stake, nearly every aspect of Superfund should be open to scrutiny. The four-part process for changing Superfund that I have established at EPA emphasizes openness and inclusiveness. It emphasizes a partnership with all stakeholders. The reauthorization of Superfund will affect the health of millions of Americans for decades to come, and it will affect the economic prosperity of the whole country. It is exceedingly important that we do the very best possible job.

We look forward to working with the committee and answering any questions.

Senator LAUTENBERG. Thank you very much, Ms. Browner, that was an excellent statement, which, I think, left open the questions for review that some members have expressed concerns about.

Oddly enough, I noticed that John Sawhill was your choice for the chairman of that subcommittee. John Sawhill used to serve on the board of a company called ADP, a company that I ran before I came here. He has significant knowledge of some of the technology and the information gathering that I hope will be of help. That is a good choice.

Ms. Browner, your written testimony confirms that we should preserve the principle of the site-specific polluter-pays liability, but some insurance companies have proposed abolishing the polluter-pays principle and replacing it with essentially a public works program, a public works fund that is paid for by higher taxes. What is the administration's view on that insurance proposal?

Ms. BROWNER. Mr. Chairman, as I understand the proposal that has been put forward, we would have several concerns.

First of all, as I said in my opening statement, we do believe that much good has come from the site-specific polluter-pays liability scheme, not just that we have been able to increasingly recover the

costs associated with clean-up, but also the way that has just fundamentally changed how we do our business in this country when it relates to natural resource protection, to the protection of the health and safety of all American citizens.

One of the other concerns that we would have, as I understand the proposal, is it would probably amount to the largest public works project every undertaken in the United States. I think if what we are about is getting the clean-ups done in the most expeditious and cost-effective manner, I am not sure that the creation of a new public works, in essence, would give us what the communities who live around the Superfund sites, and what all of us, expect from the program.

Senator LAUTENBERG. As I described in my opening statement, four principles to speed clean-up, you heard them all. Do you support those principles?

Ms. BROWNER. Absolutely.

Senator LAUTENBERG. I've criticized previous administrations for the way they handled outside contractors, including Superfund clean-up contractors. In fact, I commissioned a GAO investigation of Superfund contractors that will be coming out next month. What will you be doing to ensure that the waste, fraud, abuse problems are eliminated from the Superfund program?

Ms. BROWNER. We share your concerns, and look forward to implementing all of the proposals that will come as a result of the study.

The agency has already implemented 28 of 33 proposed improvements to the Alternative Remedial Contract System. We have put in place other actions that will lead to a more effective management of our contractors, and a more effective use of our resources.

Senator LAUTENBERG. Is that quite enough? Previous administrations have promised to study the issue, but because there is a deep-seated culture that puts little emphasis on contract management, they haven't followed through. What can you do to ensure that changes occur, and are permanent? Are your managers going to be held accountable?

Ms. BROWNER. Absolutely. We have put in place a process dealing with all of our contracts management issues in the agency, designating individuals who will be held responsible for making decisions, for implementing the changes. We have 26 officers now for whom the buck stops there.

We have also undertaken a program to educate all employees about the significance of contracts management, and also to make sure that type of responsibility and experience is a criteria given favorable weight in promotion, so that we can start to develop an awareness throughout the agency, and a hands-on experience throughout the agency in contracts management.

Senator LAUTENBERG. I have been long concerned about the liability of local taxpayers, small businesses who face frivolous lawsuits from polluters for sending household garbage to Superfund sites. What can be done to ensure that EPA settles with the municipalities and the small businesses faced with these extortion suits? What do you see as a remedy?

Ms. BROWNER. Several things. As you are probably aware, the last EPA administrator did attempt to move forward a settlement

policy for small parties. It did not make it out of the White House, but we can certainly take another look at that, and see if we can find a more favorable response.

In addition to that, we have increased our activities as it relates to de minimis parties, and taken more of a hands-on approach to helping resolve the issues associated with de minimis parties. Since 1986 we have entered into 90 settlements at 65 sites. Almost 5,000 parties have been involved in those de minimis settlements. While it is very labor intensive for the agency, it is something very committed to increasing the use of.

Senator LAUTENBERG. Will you issue the agency's municipal settlement policy? This was killed by the previous administration. Do you intend to issue the settlements policy?

Ms. BROWNER. It never made it out of OMB, as I understand the situation. We are re-evaluating the situation to see if we can move it forward.

Senator LAUTENBERG. There are over 100 New Jersey communities, and numerous other small businesses that have been sued by industrial polluters because they sent ordinary household trash to Superfund sites. Many of these parties have unsuccessfully sought to settle with EPA, to pay their fair share, to get out of the litigation money-pit. Why hasn't EPA done a more effective job of settling with these parties?

Ms. BROWNER. Again, the de minimis party settlement practice is the tool that is available to us. I am committed to making greater use of the tool. It is labor intensive, but that is no excuse for not doing it. You are exactly right. These people are brought into the system—generally they are not brought in by EPA. They are brought in by other responsible parties, who then add them to the list. But I think we, as the Federal Government, have an obligation to work with those parties, to limit their liability accordingly, and move the clean-up forward.

Senator LAUTENBERG. It is pointed out that strict joint-and-several, and retroactive, liability scheme of Superfund is grossly unfair. Do you agree with that?

Ms. BROWNER. I think the whole liability concept in the broad sense that was embodied in the 1980 legislation has brought significant changes in how we do our business in this country, very positive changes in terms of protecting people's health. There is room for discussion in terms of how to more fairly implement liability schemes. You have made a point about small parties. We look forward to working with the committee on those sorts of issues.

But I think the fundamental principle that the polluter pays to clean up is a principle that has to be maintained.

Senator LAUTENBERG. What are the costs and benefits, as you see them, of such a scheme?

Ms. BROWNER. Again, it encourages parties, in terms of their present day activities, to take more responsible actions, to be cleaner as to what they are doing with their waste, to take actions to prevent the production of wastes in the first instances. That is probably the most significant overriding benefit derived as a whole from the liability scheme.

Senator LAUTENBERG. Thank you.

Senator Durenberger?

Senator DURENBERGER. Ms. Administrator, let me go through some basics. I hope we have time for a couple of rounds.

Early in the year the President expressed some views on Superfund, including that as part of the State of the Union message. It energized the opponents of Superfund. Have you talked to him about what he said, and what his complete view might be on Superfund? In other words, is Bill Clinton a friend of Superfund?

Ms. BROWNER. I think that the President is a friend of Superfund. I think he recognizes the tremendous importance of the program. He also recognizes the problems associated with the program, and is committed to addressing those problems, to expediting the clean-up. I think we all agree on the need to do a better job.

Senator DURENBERGER. Do you remember the first question?

Ms. BROWNER. Excuse me?

Senator DURENBERGER. The first question was, have you discussed his comments with him, and what is the origin of the comments?

Ms. BROWNER. I think the comment comes from the frustration that he has heard from a number of businesses across the country who believe they are spending a great deal of money on litigation. I think it would be helpful to put this question of transaction costs into some parameters.

First of all, it is not EPA who is spending the money, in fact our transaction costs are not all that high. They have been coming down over the last several years. If you look at the $1.5 billion that is available to us in fiscal year 1993, about $200 million goes to enforcement, broadly speaking, some portion of that being for cost recovery. Nine hundred million dollars goes to actual clean-up. Then we have some other items that are funded out of the Superfund trust fund.

I think the President was hearing from people who were concerned about the costs that they were spending in terms of entering into legal disputes from company to company over the liability and the responsibility for clean-up.

Senator DURENBERGER. Good.

The second question is about your views on the objectives of Superfund. Some people say the overall objective of the Superfund program ought to be human health and the environment, that is preventing releases of toxic substances that might cause harm. You could often do that without totally cleaning up the site.

Then there is another group that says that we have to restore every site to the condition that it was in when we got the site. That means some kind of permanent remedies.

What do you think is the proper objective of the Superfund program? Is it permanent remedies, or is it preventing current harm?

Ms. BROWNER. I think that is hard to answer in the abstract. I think one of the benefits and the difficulties in the Superfund is that the analyses are site-by-site. You look at a variety of factors associated with that site.

Obviously the most important thing to do is assure that human health is protected, and it will be protected in the future. But I think that part of the dialog that we will need to engage in during this reauthorization are the very questions that you pose.

The statute, as originally drafted, did not speak specifically to, or did not specify a clean-up target level, and EPA has certainly taken actions in its policies to suggest that permanence of clean-up and risk reduction are extremely important. As we engage in this process, these are the questions we need to discuss.

Senator DURENBERGER. There is a lot of bureaucrats, in the best sense of the word, right behind you, and who aren't here, that I think need our help, not just yours, in answering that question.

Let me ask you about something that the chairman asked you about; the Superfund liability scheme. I understand your response to his last question to be that the administration does support strict joint-and-several liability.

Let me ask you about the support of that particular scheme applied retroactively. Is that the administration's current stand as far as the appropriate liability under Superfund?

Ms. BROWNER. Are you saying in terms of how we implement the program right now, which is to get responsible parties to actually handle the clean-ups, or to cost-recover against those responsible parties?

Senator DURENBERGER. Even if you didn't cause the problem, you are responsible for it, if you own the site.

Ms. BROWNER. Well, I think the point is to do the very best we can to find those who caused the site, who caused the problem to occur, and to hold them responsible.

I recognize that there are difficult questions raised where you have a sale of the property without knowledge, although that is also changing as a result of Superfund. Banks are becoming much more actively involved in terms of doing assessments of property for environmental impacts that may have occurred previously.

I think that is something that we need to discuss as part of the reauthorization in terms of where you have people who have come into ownership and may not have been aware of the contamination. Again, I think we have to be guided by some fundamental principles, as many of you have set forth, in making these decisions.

Senator LAUTENBERG. Thank you.

Senator Baucus?

Senator BAUCUS. Thank you, Mr. Chairman.

Ms. Browner, in your statement you listed essentially four studies, as I understand them. NACEPT is one, and then your inter-agency working group, and the data base, and you are going to look at potential legislation. When do you expect to reach conclusion with respect to each of those four efforts?

Ms. BROWNER. Mr. Chairman, if I might just say that I don't envision NACEPT as a study. I envision it as a very participatory, inclusive undertaking to allow all people who have been affected by the Superfund program to come forward and to have an open, public dialog.

Senator BAUCUS. You reach some kind of conclusion, even though it is not a study. When will that be?

Ms. BROWNER. They will commence their work in June, and we would hope to have the final product of their work by early Fall.

Senator BAUCUS. And the others, the inter-agency group administrated by Mr. Sawhill.

Ms. BROWNER. Yes, the administrative actions, that process is ongoing right now. We hope to be able to begin implementation of administrative actions almost immediately, in terms of as we conclude an analysis of what is appropriate, go ahead and put that in place, and get the results of those changes in administrative actions.

Senator BAUCUS. When will you be in a position to conclude whether or not you might recommend legislative changes?

Ms. BROWNER. I think it is important for the NACEPT process to be concluded and to have the value of their input. So we would anticipate, late Fall, toward the end of the year.

Senator BAUCUS. I urge you to spend a lot of time and attention to those areas, because your conclusions have very much helped this committee, and the committee in the other body. I strongly urge you to move as quickly as you possibly can.

Second, I would just like to talk to you a little more about liability. Anecdotes are dangerous, but we all have a lot of anecdotes. For example, I know of one company that thought it was not at all involved in a site. It should not be a responsible party, involved in litigation. The legal fees—it is a very small firm—were about $15,000. It turned out that its liability is $400. There are lots of examples like that, particularly in the smaller companies, who are tangentially involved. They are not the polluters. They didn't cause the pollution in the first place.

What do we do about those situations?

Ms. BROWNER. The de minimis party settlement policy offers us an opportunity. I agree that we have to do a better job.

The practice, initially, in terms of dealing with responsible parties was sort of hands-off. The parties were left to work out what they thought was an appropriate cost-share in terms of the clean-up. I think that it is probably something that we have to seriously consider whether or not that was the right decision on the part of the EPA. Perhaps we need to play a bigger role in bringing parties and in dealing with the small parties and addressing their concerns, so that they don't end up spending $15,000 in legal fees.

Senator BAUCUS. I guess the real question is, how do we get unnecessary transaction costs down? What is the answer?

Ms. BROWNER. A lot of transaction costs are associated with what goes on between potentially responsible parties. The answer is, I believe—and we are looking at this in our administrative changes—for EPA to play a more active role in getting the parties together and coming to a conclusion in a more timely manner, than allowing it to sort of hang out there year-in and year-out.

Senator BAUCUS. Has that happened?

Ms. BROWNER. Not historically, with the exception of the de minimis party. There has been activity in the agency on de minimis parties. As I said, we have entered into 90 agreements at 65 sites, involving almost 5,000 parties. But we need to do much more.

Senator BAUCUS. There a lot of lawsuits from responsible parties. That is going to create a great demand on your agency's resources to be involved in all that.

Ms. BROWNER. I absolutely agree. But I also think that as we show a willingness to help bring these things to a conclusion, and a

tenaciousness to see that occur, we will start to get these things occurring on their own.

Senator BAUCUS. So, it is your view that the law is fine, but the solution is for EPA to get more involved.

Ms. BROWNER. I think that there are parts of the law that need to, probably, be addressed. That is something we all should look at over the next six to nine months. I also believe that we have a responsibility to do everything we can to administratively make the program the best it possibly it can be. We have not done that.

Senator BAUCUS. Let me ask another question that is on the minds of some people; I'd like your response to it. The concern of some people is that we are, in this country, misallocating resources to this problem.

For example, your agency spent about $1.5 billion on Superfund last year. Compare that figure with the amount of resources the agency has spent on lead in this country. This morning's paper documents the problem this country has with lead contamination.

So, one might say that perhaps this country is spending too many resources on Superfund compared with, say, lead contamination in this country, or some other problems in this country, given the number of people who are contaminated with, apparently, lead in the drinking water systems, with the number of people who are potentially adversely affected by Superfund sites.

I am curious what your reaction to that concern, which you sometimes hear, would be.

Ms. BROWNER. There are a lot of very complex environmental issues that we have a responsibility to address. On the lead, specifically, I think it is important to note that a number of the activities that have taken place under the Superfund program have been to deal with lead concerns, in terms of sites where the lead exposure was very high, soil remediations. We have done an awful lot of clean-ups.

So, lead is, in part, being addressed by the Superfund program. But I think it is worthwhile to look at all of the risks.

Senator BAUCUS. Mr. Chairman. I have just one quick question, very short.

How does the agency rank priorities among statutes, and problems this country has with respect to adverse health effects due to various conditions? That is, Superfund versus clean water, clean air, your lead program, for example. Do you just look at the statutes and go pell mell down the road of each these statutes? Or do you make some assessments? Do you say, this country has a much greater lead problem than it does another kind of a problem, for example? Do you do that within the agency?

Ms. BROWNER. We attempt to do that, although there are times when we are constrained because of the statutes. They provide deadlines under which we have to act, or limitations because of the way the appropriations have come to us. We are specifically directed to act in an area, as opposed to another area.

In the case of lead, we have committed additional resources in our budget this year, as we talked about yesterday, because we believe it is a serious concern. There has not been the integration that you speak of across the various statutes.

Senator BAUCUS. Do you think there should be?

Ms. BROWNER. I think there is a tremendous need for greater integration.

Senator BAUCUS. Thank you very much.

Senator LAUTENBERG. Thank you very much, Senator Baucus.

Senator Boxer is next.

Senator BOXER. Thank you, Mr. Chairman.

Administrator Browner, you mentioned in your opening statement—I was really pleased to hear it—that you are going to study and bring back to the agency the results of whether it is taking longer to clean up sites in low-income neighborhoods, and if the remedies there are less protective than in higher income neighborhoods. I wonder if you can give me a time frame of when you hope to have that completed?

Ms. BROWNER. We will provide you with a schedule of activities under that analysis, if we could, in writing.

Senator BOXER. Absolutely. I would like to know because this is an issue that troubles me greatly.

You also, in your written statement, said there was a most vexing question, which is how clean is clean? You didn't read that to us.

Ms. BROWNER. It was an effort to shorten my statement.

Senator BOXER. It is a vexing question, because we have a situation which has nothing to do with Superfund. It is a clean-up of a military base in our community. It has been going on for 20 years. It is not as great a problem as a Superfund site, in terms of the contamination.

Yet, because of the liability concerns, the Department of Defense says that they will not sign-off on the liability unless it is clean to the ultimate, and we are talking about huge costs. So, I guess what I need to ask you is this an area where you are going to be advising this subcommittee on how clean is clean? Do we need to take a look at this issue?

Ms. BROWNER. The question of how clean is clean is a difficult issue. It is hard to come with one answer that works for every single site. But I think it is an issue that is appropriate for discussion during reauthorization, and it is also something that we will be looking at in terms of administrative actions that we can take to clarify clean-up goals.

The statute in 1980, and the amendments to the statute, did not specifically speak to that. It gave us a range of analysis that we should undertake, but it didn't really prioritize within that. Now, we have had a history within the agency of prioritizing within that. It may be that a re-evaluation of that prioritization is important.

I would just like to say on the whole question of Federal facilities, and the responsibilities that the Federal Government has to the citizens who live in those areas, and under the base closure, moving those facilities back into productive use for those citizens; we recognize that this is a significant undertaking, but it is a challenge and an opportunity, and have begun the process of working with both DOE and DOD in a way, quite frankly, that had not existed previously, of coming together across agency lines to see how we can do this more quickly and at lower cost.

Senator BOXER. I think that is excellent, and we discussed that yesterday. My point is that if you are cleaning up a facility that

you hope eventually will become a parking lot, then that is a different standard than if you are cleaning up a facility because you are going to build a day-care center on the site. We don't have to put day-care centers on every site we clean up. If we do, then, of course, we have to clean it to the ultimate. Even then, maybe we shouldn't put a day-care center on it.

I think when you involve the State and local people—I come from of local government—there are zoning laws. Before we set a standard, we ought know what the re-use plan is.

Administrator Browner, you stated—again, I applauded your opening statement—that one of the successes of Superfund, and you named them, was the development of environmental clean-up technologies that are not only very helpful in cleaning up these sites, but it gives us an export product. Yet, as I look over your budget, you have taken the budget of the Superfund basic research program from $31.9 million in 1993 to $7 million in your 1994 budget. That is a 75 percent cut.

I have seen extraordinary technologies that this aspect of Superfund has been behind. I saw, a way that you can remove solvents from groundwater by steam injection, so that the solvents can be reclaimed and recycled. These are very excellent programs, so I wonder why you did that? Is there another thought of how we can make up for those dollars?

Ms. BROWNER. Those dollars don't reflect a reduction in technology monies. In the last appropriations cycle there were add-ons to our Superfund dollars. There were Congressional add-ons for specific programs, increases in addition to what they would have been given in the basic allocation.

For example, ATSDR, those have not been carried forward in this year's budget, but I don't think that it is fair to interpret that as a reduction in the monies that we are making available to technology developments. We have carried forward funding for ATSDR, but not the add-on from last year.

Senator BOXER. So, how much are you carrying forward?

Ms. BROWNER. The $7 million, apparently, that you are referring to is the NIH portion. We have $70 million in our research portion of the Superfund program.

Senator BOXER. So we have $70 million, and what was cut was the NIH portion.

Ms. BROWNER. A piece of it was cut. There was a congressional add last year.

Senator BOXER. Thank you.

Senator LAUTENBERG. Thank you, Senator Boxer.

Senator Smith?

Senator SMITH. Thank you, Mr. Chairman.

Mr. Chairman, Senator Warner, my colleague, has to leave. I would like to yield my time to him, providing I can come back in Mr. Warner's slot.

Senator LAUTENBERG. Absolutely. We welcome Senator Warner. We know how busy he is. We have seen him all over the globe doing his duty. We are glad to have his wisdom and his presence.

Senator WARNER. Thank you, Mr. Chairman, and I thank my colleague. I enjoy my service on this committee, but there have been one or two items that kept me away.

You are doing a great job. I think it shows through in your energy, and the pleasure with which you are fulfilling the responsibility.

I want to ask you; remember that firm commitment you made to me during the course of the confirmation process? How are you getting along on that?

Ms. BROWNER. I think I am living up to all of my commitments. I hope I am.

Senator WARNER. We are going to get this done. We have to get better working conditions for your people here in the Nation's Capitol.

Ms. BROWNER. Thank you.

Senator WARNER. One of my greatest claims to fame, what little fame I have, was in 1970. I was Under Secretary of the Navy. I tore down old main Navy on Constitution Avenue to build a new headquarters. We got new headquarters.

Promise we are going to do that together.

Ms. BROWNER. Absolutely. I will tell the committee that we anticipate a recommendation coming forward from GSA as it relates to a move for us, perhaps, as early as this week.

Senator WARNER. You have the support of this Senator, I can tell you.

Senator LAUTENBERG. The chairman, and this subcommittee, will get behind you.

Ms. BROWNER. Thank you.

Senator WARNER. Now, I'd like to follow-up on a question Senator Baucus asked. I agree with his position on this question of liability. What about the proportional liability doctrine? Are you open to some thoughts on that?

Ms. BROWNER. Again, I think as we come through reauthorization, it is important to look a variety of issues.

Proportional liability could well lead to actually more litigation as we entered into a lot of minute debates about how much this party contributed to the site versus that party. It may not get us what we really want, which is to expedite the clean-ups, to put the land back into productive use. It could, in fact, escalate the transaction costs.

Senator WARNER. Keep an open mind, because you have to do something in this area. There is too stiff a penalty here for some of the people that are really trying to work with you, but are bearing too much.

Let's go back to Superfund. In Virginia we have, in the center of a town, an old battery factory. It spilled everything for 40 years. Way out in the mountains—we used to put them out in the mountains in the old days—we had a tannery. We didn't like the odor. The townspeople way back then didn't like tanneries, and we put them out there where they could operate. Now, both are eligible, but this is a high priority, in the center of town. This one, it seems to me, that there is some concern associated with this, but that maybe it is acceptable.

Given we have too many sites, too little money, are you willing to look at some flexibility in trying to re-order this permanent restoration doctrine in such a way as to be commensurate with the risks, recognizing, in my humble judgment, that the more sites we

clean up to a level of risk which is acceptable in the environment and habitation, we are better off, than if you clean up this thing way out here 100 percent. Nobody is going out there, except occasional deer hunters.

Ms. BROWNER. We are, as part of the administrative review process that we will undertake, committed to looking at the whole question of permanence versus risk reduction versus beneficial use. We believe there may be some flexibility to allow us to take into account the sort of situations that you mentioned.

I think it is important to distinguish, not just between the location of the site, but between the contamination that may exist. Where you have soil contamination, a certain type of activity may be appropriate, but where you have ground water contamination, a different activity is appropriate. So it is not always just the location, it is the nature of the contamination that has to enter into the discussion.

Senator WARNER. I understand that, but Senator Boxer raised this point—I agree—as to what the future use in terms of the community and so forth. Those factors have to be cranked in if we are going to keep a maximum benefit for the tax dollars.

I thank you. Good luck.

I thank my friend, rarely do you see that courtesy from Yankees.

Senator LAUTENBERG. We would then change the order. Senator Smith, I assume that you are going to take your time?

Senator Metzenbaum would be next. He is a member of this subcommittee. We welcome him.

Senator METZENBAUM. Good morning, Ms. Browner.

My questions will be very short. Frankly, I don't know that it has to do with a question and answer. It has to do with action.

Here is the story from this past Sunday, "Superfund has little to show for 13 years. Waste clean-up draws barbs from all over." Lautenberg blamed for everything. No it doesn't say that.

In Uniontown, Ohio, industrial excess landfill has been a real problem. It has been on the Superfund list for almost 10 years. I am frank to say that site has been particularly nasty. We've had disputes over the adequacy of EPA testing at the site. We've had concerns about methane gas leaking from this landfill. I had to fight with EPA, before you came into office, to get the agency to buy out the residents whose backyards abutted the dump. I finally won that battle. They did buy them out. EPA invalidated radiological testing at the site, not once, but twice. We still don't have an adequate characterization of the contaminants present at the site.

The list of the problems goes on and on. I am frank to say that EPA regional offices have spun a lot of wheels over the Uniontown site. Here we sit almost 10 years after the site was placed on the clean-up list; no actual clean-up has begun. It is just not the way for our government to conduct its business.

Senator Glenn, Congressman Sawyer and I wrote you a letter about this very subject. Realistically speaking, Uniontown is just one of many sites. The bigger problem is Superfund. Clean-up delays abound, and citizens don't trust the EPA. Lawyers are growing rich by reason of Superfund.

I guess the immediate question is, in your own timetable, in your own mind-set, when can we expect actual progress, and action with

respect to sites like Uniontown? I think if the country feels that the EPA is really moving on this site and that site—we can't expect you to do it all—but there is a fair expectation to get started on the job and see some real progress.

Do you have any thoughts on that?

Ms. BROWNER. We couldn't agree with you more, Senator, that 10 years to clean up sites is too long. We are committed to doing everything we can to expedite the clean-ups, everything in terms of model clean-ups that we can bring and apply to several different sites, rather than developing individual clean-up plans for every site. We just have to do a better job. We have to do this in a more timely manner.

In the site that you specifically raise, if I understand the situation correctly, we are awaiting a science advisory board review of the Clean Sites Study that we did at the behest of the citizens in the community. We believe that the science advisory board review will not only be helpful in terms of this site, but could also have application at other Superfund sites where radioactive contamination has been suspected, and should give us some information on how to move forward, hopefully on more than just the site that you mentioned, but obviously on the site that you mentioned.

Senator METZENBAUM. Nothing would be more reassuring to the people of this country than to know that their government is really starting to act. I think they feel we have too many committees, too many commissions, too many study groups, too many reference points back and forth, and the government just doesn't do anything except spend money.

You certainly cannot accept the responsibility for what has transpired in the last 10 years. I would say to you that any effort on your part to show activism would indicate that things are being done. There is an advisory committee; go to them, you have two more months, I want it in one month. Let's get this thing rolling. They feel we are spending a bundle of money in this area and not getting much for it.

I'm pulling for you to succeed.

Ms. BROWNER. Thank you.

Senator METZENBAUM. But I think action is called for, and if you make a misstep at some point, that would be better than no steps at all. I think the country would support you; I know Congress would.

Ms. BROWNER. Thank you.

Senator LAUTENBERG. Thank you, Senator Metzenbaum. I hope that you will have a chance to review, if you haven't already, the Administrator's testimony, where she details some of the significant progress under Superfund.

One can't allay suspicion, or attitude, in the public, but one of the things that we've learned when Superfund I expired after 5 years, it was inadequately funded—the program actually lapsed for a year—causing professionals, many of whom were engineers and scientists with different skills who were uncertain about their future; many left. The morale was at a terribly low point. That was caused by inaction here, I think, and as a result, it took some time to get the program back up.

But if we look at the second quintile, of Superfund's authorization, you'd see quite a different pace evolving in the process of collections from responsible parties. Over $7.4 billion from responsible parties has been received. While we absolutely can improve the process, I think it would be unfair to just characterize it as a total bureaucratic malaise, or morass, that has existed.

There has been a lot of good work. We are here for the purposes, Senator, of correcting it and making it better. That is absolutely our mission.

Senator METZENBAUM. I look forward to working with you.

Senator LAUTENBERG. Thank you.

Senator Smith?

Senator SMITH. Thank you, Mr. Chairman.

Ms. Browner, I also like your statement. I think you gave a very good analysis of the problems. I think you did it fairly. I really sense in not only the public hearings, but also in the one private discussion that we had prior to your coming before the committee in the nomination process, that you genuinely understand the situation and the impact that it is having on many people throughout the country, especially not only the communities impacted by the sites, but PRPs as well.

I certainly agree with what you said, the polluter pays principle. I think that is fair. I think that is the whole purpose of the program. But I guess where we have problems is identifying who the polluter is, how much does the polluter owe. I don't think that we are doing that in a fair manner. I think that is the sense of the real problem.

Let me give you one example. EPA, as you know, has the authority to use mixed funding at sites that do have orphan shares, or sites where the PRPs are not identified. How many times, do you know, mixed funding has been used? Does any of your staff, or do you, know how many times we have used mixed funding?

Ms. BROWNER. My staff says that in approximately 12 to 13 sites mixed funding has been used.

Senator SMITH. It doesn't seem like very many to me, if we are really, truly going to get this resolved. There are PRPs out there who are deliberately trying not to comply with the regulations, that is true. But I think with the vast majority it is the opposite. They'd like to know how much they owe, and get it behind them and not have it come back at them 10 years from now, or 50 years from now.

Also as you are well aware, another difficulty is that there are many, many cases where these people are retroactively asked to assume liability, when in fact there was no Superfund law at the time. This is another problem, as well.

There is a site in New Hampshire where three PRPs have been identified. One of them is insolvent. The insolvent PRP contributed the most in contaminating the site. The other two are left holding the bag. It just seems to me that this is the type of case that we ought to resolve. We ought to just draw the line here in the sand, and say, this is what it is; this is what you owe; this is what is fair; and move on. I would hope that we could do that.

In regard to your statement that administratively you'd like to deal with this, I hope you can, but I am not convinced that is going

to be the case. I think we are going to need legislative remedy. I think you are sincerely trying to do it administratively. But I believe there is legislative remedy needed.

Do you truly believe that simply making administrative changes will do it, or do you really feel that, honestly, that there would be legislative remedy necessary?

Ms. BROWNER. I apologize if I gave the impression that we didn't think legislative changes would be necessary. I think that there is a great deal we can do administratively, but I don't think we are going to be able to do absolutely everything. I think it is important that we work together looking at legislative options, and that the NACEPT process, the dialog that we are committed to putting in place with all of the stakeholders, will be very valuable to helping us to determining what can be done administratively, and what needs to be done legislatively.

I think this is going to be a series of actions, if we are going to focus the program and shape the program to do what it really needs to do in the next 10 years.

Senator SMITH. Some of these things have been addressed. I will be very brief on it. I think I could certainly think of, off the top of my head, four areas that I believe would need legislative remedy. It depends on how far you can go administratively.

In terms of clean-up standards, the law requires sites to be cleaned up to residential standards. I think Senator Boxer went into that. I don't think there is always enough risk assessment in that regard. I don't think one standard fits all sites. So, I think that is an area we ought to look at. Whether it takes administration or legislation, I don't know. I would believe that it would have to be legislative.

Also, flexibility in remedy selection; we have a lot of traditional clean-up methods that sometimes don't work on an individual site.

Third, the one that I just went into, orphan and insolvent PRPs; this goes to the issue of fairness, I think. That is really where you are getting the most flack from business, and I think justifiably so. I think we can work that out.

Fourthly, I might ask your opinion on this as the final question. I just conducted a number of meetings with both municipalities and companies who, in one way or another, are involved as PRPs, or possible PRPs. Also, as you are probably aware, there has been a task force headed by Congressman Zeliff, in my State, to try to get some input on this. We have looked into all these things.

There seems to be one common denominator. That is that the States and the local communities would like to have more involvement, more input, more say, not only in the solution, but in terms of expediting it. The criticism you hear over, and over, and over again, is that it just hangs and hangs. Nobody gets anything resolved. It just hangs out there; we can't find the PRPs; we don't know how much; on, and on, and on.

There is a lot of good knowledge and good information that State EPA administrators can provide, as you well know,. I would hope that you would use that to full advantage, and perhaps we could change the law to get them more involved. I would just like your reaction to that. Since you served as a State administrator, you would know.

Ms. BROWNER. I think that you are exactly right. The States provide a real opportunity in terms of getting the job done. Many States have moved forward to create their own Superfund programs, and are very actively involved. Others have not taken that step, but are still involved.

We would include in the NACEPT committee representatives from State and local governments, so that can be part of the dialog, so we can really evaluate and know what we can do. What can local government do? What is the Federal Government's responsibility?

Senator SMITH. I would just say, in conclusion, let's not study it to death. I really believe that your intentions are noble and good. You are new; you just came on the job. You have to look at it, but there is a lot of information out there. A lot of studies have been done. A lot of conclusions have been made that I think we ought to start looking at.

I appreciate what you have done.

Senator LAUTENBERG. Senator Kempthorne is not a member of the subcommittee, though he is a member of the full committee. We are happy to have his participation. We ask him to ask his questions.

Senator KEMPTHORNE. Mr. Chairman, thank you very much.

Madam Administrator, I notice in your opening comment that you provided us, that you state, and I am quoting from that, "EPA has completed the construction phase of long term clean-up at 164 sites. There are 1,286 Superfund sites."

Would you please help me understand? What does that mean? What does "construction complete" mean?

Ms. BROWNER. There are several steps associated with Superfund sites. Construction complete means one of two things; that either the site has been totally remediated, or that we have completed construction, for example, with ground water, and that the clean-up is proceeding, but there is not additional construction to take place. It can, in some instances, take 20 years to clean the ground water. We call it a construction complete once the facility is in place to clean the ground water. We put it on that list, rather than wait 20 years, because the activity is essentially completed. What you have is an operation and maintenance activity.

Senator KEMPTHORNE. So, of the 1,286 Superfund sites, how many of those have reached a point that they are now back into productive use, with clean bill of health from EPA?

Ms. BROWNER. Well, the 164 would represent those that are essentially completed. We do have, of the 1,286—I did go through it in the testimony—we have activities underway at essentially all of those sites, at one degree or another.

In many instances, we have in any instance where it is appropriate a removal action has occurred. That is we go in and we immediately stabilize the site, take a removal action to make sure that there is no eminent threat to human health. In some instances, that may allow for certain activities.

Senator KEMPTHORNE. Included in the goals, then, is it realistic to consider that next year we could agree that x-number of Superfund sites will also be placed in that category?

Ms. BROWNER. Yes. We have a goal of one a week, of 52 essentially. It is a goal that is optimistic, but one that we believe we can achieve.

These are hard. These things don't happen easily. It is extremely important that we involve the communities, that we involve the State. All of that takes time, but we are committed to expediting.

Senator KEMPTHORNE. I have seen first-hand examples of where there is a contamination on a specific site, an underground plume maybe. But the local municipalities, the State have asked the EPA, please do not get involved; please do not list this. We want to get this resolved, and we can move quickly.

The EPA, this week in Idaho, announced that it proposes listing two sites. One is the Blackbird Mine site in Lemhi. Another one is a mine tailings pile in Triumph, Idaho. The residents of Triumph have been working, back and forth, with EPA on this issue. In a meeting in Triumph in March, EPA apparently acknowledged the inadequacy and the conflicts in the data to support a listing, but argued that the site should be listed in order to get the money to do more testing.

So, my question is, does it make sense to continue to spend millions of dollars to add new sites to the NPL list, when the listing may be questionable, and we are marginal with our progress with those that have been listed for years?

Ms. BROWNER. There are monies that become available to a site when they are listed that are not otherwise available under the existing law. The process for listing a site involves analysis and a scoring system. The particular site that you mentioned did receive a score of 100. That is a threshold at which we list sites.

We are in a comment period, and we will obviously take all of the comments that people want to make, and will review those thoroughly before a final decision is reached. It is not common, but it does occur, that there are disagreements over sites being listed. Generally, the analysis that goes into making the proposal to include a site on the NPL is such that there is general agreement to see the site listed.

Senator KEMPTHORNE. My final question is, again, in your comments, it reads, "In the most vexing question of all, how clean is clean?"

Could you please give me your views on that whole thing? That is a vexing question.

Ms. BROWNER. We presented it as a question, because I believe that it has to be part of the dialog over the six to nine months as we move forward administratively and then legislatively with the committee and the Congress. It has to be debated. It is something that is appropriate for the debate.

The knowledge that we have after 12 years is radically different than the knowledge we had when the program commenced. The most important thing, I believe, is to make sure that we are providing citizens with a level of clean-up that is going to protect their health and give them access to the resource over the long term. As I said earlier, when you deal with soil, that may one thing. When you deal with groundwater contamination, it may mean another thing.

Senator KEMPTHORNE. Mr. Chairman, thank you for your courtesy.

Senator LAUTENBERG. Thank you for being with us.

Ms. Browner, in your comments, you said that you endorse the site-specific polluter-pays concept. Just to be sure, what does site-specific mean?

Ms. BROWNER. A Superfund site.

Senator LAUTENBERG. It identifies a particular site, and any of those associated with the site are potentially responsible parties, or whomever, that contributed to the deposits there, that is what we are talking about when we talk about site-specific. We are talking about the envelope of participants only who may have deposited material there.

I wanted to be sure that the record reflected that.

I understand that for the past year that EPA has been working on an expression that I learned today, which is de micromus settlement policy. Is that true?

Ms. BROWNER. I apologize. I should have known this. I don't know this, but my staff is telling me that is in fact true. It is for the really small parties, I suppose, as opposed to the small parties.

Senator LAUTENBERG. Or the itsy-bitsy ones.

Ms. BROWNER. Right.

Senator LAUTENBERG. I think in reference to some of the comments that Senator Baucus was making, that perhaps there is an opportunity to resolve an issue like that within a settlement policy. Is that an issuable policy? I assume it is going to help the smallest small business, smallest contributor to pollution.

Ms. BROWNER. Absolutely. In talking about the administrative fixes that are available, the de minimis party, I was speaking to not just the small parties, but the itsy-bitsy parties. Obviously, they are all included in that. I probably should have been more specific.

Senator LAUTENBERG. That is funny.

It is said by some that the liability system slows down clean-ups. Has EPA done any empirical studies on that issue? What was the outcome, if you have?

Ms. BROWNER. The staff tells me that we have undertaken to look at the issue, and that on initial investigation, it is not our belief that it substantially slows down clean-ups. But I do think, again, as we look at the administrative options there are roles that we can play as an agency to expedite the settlement between responsible parties, that we can make a greater use of settlement tools. We can develop policies, speaking to one of the earlier questions, to encourage more mixed funding. We can play a much more active role in getting the responsibility allocated and the clean-up moving forward.

Senator LAUTENBERG. By the way, I don't think it is implicit in the question that the slow-down is ultimately harmful.

Ms. BROWNER. No.

Senator LAUTENBERG. It may result in a more thorough review, and a better attribution of responsibilities. It would be helpful if you could review that, and try to do an assessment of whether or not the liability scheme itself is part of a slowing process.

Ms. BROWNER. Mr. Chairman, if I might, I think it is important for everybody to understand that where we know there to be an

imminent health risk, we take immediate action. We don't wait for the responsible parties, unless they are willing to move with all due speed. The issue involving the responsible party comes up as related to the long term clean-up and activities associated with that. There is no delay when there is a pressing and immediate emergency. We move forward.

Senator LAUTENBERG. In the hearing we held last week on the health effects of Superfund, witnesses pointed to some terrible results from exposure; birth defects, cancer from living near these sites. One witness raised concerns about whether a site in Aspen, Colorado, posed a serious threat in light of recently developed scientific data on the bio-availability of lead in soil. I assume that site got some attention at EPA.

Is Aspen a unique situation?

Ms. BROWNER. The studies that have been done in the agency for toxics and disease registry, for example, estimates that only about two percent of Superfund sites posed no health threat. In the site that you raise, Smuggler, the ROD has been completed, but there is a suggestion that new science has brought information to us. There are opportunities through an amendment process, or otherwise, to re-consider the ROD, and to make changes where appropriate.

I think that if you look at the history of RODs, and where amendments have been appropriate, they are relatively small. In most instances, that is not the case.

Senator LAUTENBERG. Thank you.

Senator Durenberger?

Senator DURENBERGER. While I was out, Senator Boxer talked about this clean-up issue. I will try to correct the record. Maybe this isn't even a question, but you can comment on it. Senator Kempthorne asked you how clean is clean, and I asked you in the beginning about the two standards.

I am going to read the Superfund law as it relates to the preference for permanent remedies. It says,

> Remedial actions in which treatment that permanently and significantly reduces the volume, toxicity, or mobility of the hazardous substance, pollutants and contaminants is a principle element, are to be preferred over remedial actions not involving such treatment.

When Senator Boxer made the comment relative to cleaning up sites so they can be used for day-care centers or parking lots, I think, with all due respect, that, first, is not what the law says; second, it isn't the principle of stewardship that I think is implied in environmental policy. It would clearly limit the choices that future Americans can make. Just the reality of passing on groundwater contamination to others is the generational equivalent of the deficit.

So, coming back to the first question I asked you, it is not easy to resolve, as you pointed out. I thought I would make that comment for the record.

Third, let me ask you about the benefits of the current Superfund liability regime, particularly the forward looking benefits. One of them is a fear of liability. People who know what the law is, know that waste mismanagement, or improper disposal, and so forth, is a great, big financial problem for them. That is a benefit to this regime right now.

Would you not agree with that?

Ms. BROWNER. Oh, yes. I think that has been one of the most significant effects of this law, not just in this area, but in all of our environmental activities.

Senator DURENBERGER. We are struggling in this subcommittee, and the committee, with how to deal with a variety of these things. We may want to consider dealing with the site problems created by past mismanagement perhaps differently from problems that deal with future mismanagement.

Would you just generally agree that might be an interesting area for us to explore, that we ought to keep the regime as we now know it for clean-up as to new sites that come up, that there is a way use the joint-and-several liability standard for releases, keep that in force as a way to discourage, or to encourage, proper management in the future?

Ms. BROWNER. I think site-specific polluter-pays is a fundamental principle. That should be maintained for the reasons that you and many others have recognized today. It has been a very significant influence.

Senator DURENBERGER. Let me ask you a question that I don't think has been asked yet that relates to the transaction costs. If you believe that Rand study, at sites where insurance companies are involved transaction costs, including litigation, may be 80 or 90 percent of total expenditures, all of which get assigned to Superfund.

Ms. BROWNER. Superfund costs generally, but not to the Superfund Trust Fund. It is not a taxpayer burden.

Senator DURENBERGER. But in the context of the way people are looking at Superfund, they look at a study like this and say Superfund is costing us 80 to 90 percent for, in effect, the meaning of insurance policies that were written in the 1950's and the 1960's and the 1970's. It just seems a little unfair to blame Superfund for the costs of what are basically insurance disputes.

Would you not agree?

Ms. BROWNER. That is why I think it is very important that we all understand when we talk about the costs associated with the program what we are actually talking about. I think there has been a lot of misconception about the lawyers' cost and the insurance cost. The decision to spend this money is made by the insurance company in its pursuit of another party, and they don't necessarily have to make that decision.

I think there are things we can do to discourage that type of activity that we have not historically done. But that doesn't mean it will not continue to happen in instances where that is how the company wants to proceed.

Senator DURENBERGER. Let me ask you my itsy-bitsy question. Frank and I have been on different tracks on municipal liability and things like that. The reality is that this municipal liability problem, in particular, and others that come up under the joint-and-several liability without the right of contribution just wouldn't be fair.

The problem is what Superfund lawyers are doing out there. I am going to tell you right now, from my own State, your predecessors and you have been very helpful with one of these; it is the Oak

Grove suit. I am going to read for the record. This is the attorney, in a letter dated April 22, for such itsy-bitsy as Northwest Airlines, 3-M, and our big power company, Northern States Power Company. They are writing to the lady who sells hats out of a two-by-four office on the main street of Anoka, then the guy next door to her has the shoe repair parlor.

Here is what they say, "I am writing to you on behalf of the Oak Grove Sanitary Landfill district as litigation counsel for the trust. This is to inform you that, number one, you will be a defendant in an impending contribution cost recovery lawsuit brought by the trust, and, two, you have a limited time opportunity to settle your differences with the Trust, and receive contribution protection against"—I can't believe this is coming out of a lawyer. Well, I guess maybe I can. "—to settle your differences with the Trust, and receive contribution protection against future lawsuits by the Trust."

It goes on. On page three it says, "Unless you settle promptly the Trust will name you as one of the defendants in a civil environmental suit in Federal District Court in Minneapolis."

On page four it says, "We are providing an early settlement discount for companies like you." Isn't this incredible? "We are providing an early settlement discount for companies like you. Companies like you require a payment of $30,000. We will settle with you for 50 percent of this amount, if completed within this early settlement period."

It goes on to say, "In order to settle with the Trust Group and the EPA, you will have to do three things: Agree to the terms of the Trust Agreement now in place, and sign the Agreement; agree to the terms of the consent decree, and sign that agreement as a settling party; and, three, pay the early settlement amount of $15,000. Finally, I must emphasize that the dates and terms of this demand are not negotiable."

Can you see this little, old lady in the hat store?

"The group of defendants which we have identified is quite large, and we simply do not have the ability to make individual variances from the amount noted above. To participate you must sign both documents and pay in full by June 15, 1993."

This is what is going on.

Ms. BROWNER. I absolutely agree that this is what is going on. I want to make two points. First of all, EPA does not send these sort of letters out. These are letters sent by large responsible parties. We do not encourage these activities. If fact, we discourage these activities.

I think, perhaps, one of the unintended consequences of the law that we will need to address—and again we can do some things administratively, but we may need to deal with it legislatively—to prevent, or to sharply reduce this inappropriate use of the liability scheme. No one seriously thinks that this person who received this letter—or these persons; it may well be a long list of people who received this letter—have this responsibility.

It is a really distortion of the whole program, and of what we are attempting to do. I think it is unfortunate because I think it is skewing the public perception of a program that I think has done a

lot of good for the public. It needs to do a better job, but it has done an awful lot of good.

Senator DURENBERGER. I just have one last question. I'd like—and I think it would helpful to both of us—if you would respond in writing, after you give it some thought, to two questions. I heard what you said about the AGI and so forth. Think about that, though, in the context of simply of a municipal landfill carve out. We've begun to adopt that sort of notion. So just take the municipal landfill part of it we have been debating here. It is about 20 percent of the NPL sites right now, I think. Think about it in the context of some tax, or something like that, and see what you think about taking municipal landfills out of the Superfund program.

The second is potentially to expand the State role in all of this. Since most of these sites were created back when the States had responsibility or jurisdiction over waste management, see what you think about a block-grant proposal to the States, where they could take responsibility for old sites. They could use their particular process for doing it. We would keep the new site management, and they could take on the old site management.

Ms. BROWNER. We would more than happy to work with you on that, and provide comments in writing.

Senator DURENBERGER. Thanks.

Senator LAUTENBERG. Thank you very much.

Did you want to enter that cruel lawyers' letter in the record?

Senator DURENBERGER. Might as well.

Senator LAUTENBERG. That is not a privileged thing. It was sent out to a lot of people.

Senator DURENBERGER. I don't think so. Yes, I would be pleased to have it entered.

[The referenced letter follows:]

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*ADMITTED IN D.C. ONLY

April 22, 1993

NOTICE OF LEGAL CLAIM

Re: Impending Environmental Lawsuit and Opportunity for Settlement

I am writing to you on behalf of the Oak Grove Sanitary Landfill Trust ("Trust"), as Litigation Counsel for the Trust. This is to inform you that (1) you will be a defendant in an impending contribution/cost recovery lawsuit brought by the Trust; and (2) you have a limited time opportunity to settle your differences with the Trust and receive contribution protection against future lawsuits by the Trust.

The following gives you a description of the contaminated site, the Trust, the impending lawsuit and settlement.

A. THE SITE

The contaminated site is the Oak Grove Sanitary Landfill located in Anoka County, Minnesota. The site was used as a mixed municipal and industrial landfill from 1967 to 1984. On June 10, 1986, it was placed on the National Priorities List as a contaminated federal Superfund site. Hazardous substances at the

Oak Grove site include, but are not limited to, arsenic, barium, benzene, 1, 2-dichloroethane, ethylbenzene, nickel, toluene, vinyl chloride and xylene. Wastes which characteristically produce these hazardous substances include (but are not limited to) oil sludge, paints, solvents, foundry sand and wastes, acids, metal sludge, chlorinated and non-chlorinated organic compounds, cutting oils and lubricants, cleaning solvents, inks, pesticide wastes, aerosol cans, paint removers, lacquers, garden insecticides, household chemicals, and the like.

Waste generated or transported by your company was transported to and dumped at the site.

On December 23, 1991, the Environmental Protection Agency ("EPA") issued an unilateral Administrative Order under Section 106(a) of the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA" or "Superfund") (42 U.S.C. § 96061(a)) ("106 Order") requiring clean-up of the site.

B. THE CLEANUP AND COSTS

The EPA has extensively investigated the conditions at the Oak Grove site. Monitoring has uncovered hazardous substances in contaminated soils and groundwater at the site. The EPA's costs, which are recoverable by EPA from site generators and transporters, currently exceed $2 million.

The final site remediation required by the EPA includes capping the landfill, including installing a geomembrane barrier layer, monitoring ambient air, long-term monitoring of shallow and deep aquifers and long-term monitoring of surface waters. The remediation will cost an estimated $4.5 million, so the total cost is estimated to be $6.5 million.

C. THE TRUST

The Trust is composed of several dozen companies who have committed to front the costs of cleaning up the Oak Grove Sanitary landfill. The members of the Trust have collected over $6 million to fund the final remediation, monitoring and reimbursement for costs.[1] In addition, the Trust members have expended substantial sums for legal, engineering and consultant fees.

The Trust, through the impending lawsuit, will seek to recover from you and other non-Trust member waste generators and transporters the approximately $6.5 million plus fees and expenses that the Trust has committed to clean up the Site.

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[1]The range of individual contributions is between approximately $30,000 and $130,000.

D. THE LAW AND THE LAWSUIT

CERCLA imposes joint, several and strict liability on generators of "hazardous substances." Hazardous substances include not only hazardous waste and characteristic waste, but also 1,000 or more chemical compounds set out in 40 C.F.R. § 302.4. A trace amount of any substance listed as hazardous invokes CERCLA liability. Virtually any waste stream sent to a CERCLA site may contain hazardous substances subject to broad Superfund liability.

CERCLA permits parties who clean up a Superfund site, such as the Trust, to recover costs from others who are responsible for the contamination. Our investigation shows that you are either one of the companies which generated waste which was transported to and dumped at Oak Grove, or are a company which transported that waste to Oak Grove. Under CERCLA, you are legally liable to the Trust for your share of the costs of cleanup.

Unless you settle promptly, the Trust will name you as one of the defendants in a civil environmental lawsuit in federal district court in Minneapolis. That Complaint will be filed later this year. The lawsuit will ask the Court to require all defendants to reimburse the Trust for contributions and out-of-pocket expenses towards cleanup, for the costs which the EPA has incurred and will incur in overseeing the cleanup, for any costs of the Minnesota Pollution Control Agency ("MPCA") which have been passed on to the Trust Group, and for all the attorneys fees and costs incurred in securing contribution and cost recovery from defendants.

Once the Trust's Complaint is filed with the Court, you will have twenty (20) days to file a formal Answer with the Court, setting out your legal position and any legal defenses you may have to the action. You will also be served with discovery at the time of the Complaint; you will have to provide information regarding your waste stream, disposal of waste, use of waste haulers, use of the Oak Grove Sanitary Landfill and financial information about your company or firm. All that information will be used at the trial to establish your share of the costs for the site.

E. HOW YOU CAN AVOID THIS LAWSUIT & SETTLE WITH THE TRUST AND THE EPA

There is a limited period of time during which you can act to avoid being named in this lawsuit.

The Trust and the EPA have been negotiating a Consent Decree under which the Trust commits to long-term responsibility for cleanup and monitoring of the site, and through which the EPA will settle with the Trust. You have an opportunity to join in and receive the benefits of the settlement which will be entered into between the EPA and the Trust.

The most important benefit for you, as a potential defendant, is that any party who settles with the Trust will not be sued by the Trust for any portion of the costs of remediation at the Oak Grove site. In addition, we have been discussing with the EPA the possibility that anyone who settles with the Trust **before the Consent Decree is filed with the Court** will be able to sign onto the Consent Decree and receive the protection provided in the federal Superfund law from suits by other parties or groups, and the EPA, for contribution or repayment of others' costs. We have reason to believe that EPA will be receptive to this concept. This concept would provide additional protection to settling parties, since not only will they not be sued by the Trust and potentially by EPA, they would not be sued by **any other of the several hundred parties** at the site and asked to contribute money to reduce their shares of the cleanup costs. By becoming a member of the Trust and signing onto the Consent Decree, you would have the same assurance as the existing Trust members that the EPA and other parties would not be able to increase the amount you pay to settle your responsibility for the site.

There is a second substantial benefit to early settlement. As a settlor under the Trust Agreement, the Trust Group will not look to you for future contributions to the ongoing cost of cleaning up and monitoring the Oak Grove site under the cleanup plan that has been accepted by the EPA.

There is a third substantial benefit to early settlement. We are providing an early settlement discount for companies like you. Companies like you require a payment of $30,000. We will settle with you for 50% of this amount if completed within this early settlement period.

It is vitally important that you act now. We expect the Consent Decree will be finalized and lodged with the Court shortly. To join in and receive the benefits of the settlement between the EPA and the Trust, **you must sign on to the Consent Decree before it is filed with the Court**. There will be a period of time needed to finalize arrangements with the EPA to add your name to the Consent Decree, so prompt action on your part will avoid losing this opportunity.

In order to settle with the Trust Group and the EPA, you will have to do three things:

(1) agree to the terms of the Trust Agreement now in place and sign that Agreement;

(2) agree to the terms of the Consent Decree and sign that Decree as a settling party; and

(3) pay the early settlement sum of $15,000.

The money required for you to join the settlement is significantly less than we will seek in Court when we proceed with our lawsuit against you, and is of course separate from any demand which the EPA or another party may seek in a direct action against you.

You may call Charles Nauen, Christopher Sandberg, or William Gengler, litigation attorneys for the Trust, at 339-6900 for further information about how to submit payment and sign the Trust Agreement and Consent Decree. We will be holding a public informational meeting on May 5, 1993, at 6:00 p.m. in the gymnasium of the Anoka Ramsey Community College, 11200 N.W. Mississippi Boulevard, Coon Rapids, Minnesota. You are welcome to attend that meeting to hear more of the process for settling with the Trust.

I must emphasize that the dates and terms of this demand are not negotiable. The group of defendants which we have identified is quite large, and we simply do not have the ability to make individual variances from the amount noted above. To participate, you must sign both documents and pay in full by June 15, 1993.

Very truly yours,

OPPERMAN HEINS & PAQUIN

Charles N. Nauen
Litigation Counsel for the Oak Grove
Sanitary Landfill Trust

c: Oak Grove Sanitary Landfill Trust

Senator LAUTENBERG. I don't know how the partners are going to feel when that letter is made public, but it has been exposed, obviously.

Senator DURENBERGER. I think it is probably happening all over the country. I don't expect in my State of Minnesota, but I see it.

Senator LAUTENBERG. In New Jersey, we don't have cruel lawyers like that.

[Laughter.]

Senator LAUTENBERG. We should end that discussion where it is.

Thank you very much, Senator Durenberger.

I just want to review a few more things, then we will conclude this hearing.

The bipartisan majority has sponsored S. 773, which is my bill to promote voluntary clean-up and economic redevelopment of these sites with relatively minor contamination. The bill has been endorsed by bankers, business people, environmentalists, States, and local governments. How about the Administration? Do you have a position on this bill which I introduced in April?

Ms. BROWNER. The concept of voluntary clean-up and encouraging voluntary as you have set forth is one that we absolutely support. We would like to work with you on some of the details in the legislation. We can speak to you more specifically about those.

Senator LAUTENBERG. But conceptually you agree?

Ms. BROWNER. Conceptually, yes.

Senator LAUTENBERG. As you know I co-sponsored an amendment to the EPA cabinet bill that would create a new office of environmental justice. How would you envision targeting the responsibilities of this office, particularly in the area of Superfund?

Ms. BROWNER. Well, I think one of the, as we said earlier, legitimate complaints about the Superfund program, that we are in the process of analyzing so that we can fully understand, is how we have dealt with low income and minority communities, and whether or not the program has been as available to them as it has been to other communities. All of this will be very instrumental in making sure in the future that we work with those communities, that we provide them access to the program, to the TAG grants, and all of the other components of the program.

We just have to do a better job. We have started the process of actually going into the communities where the work needs to be done to educate the citizens in the community and to involve them in the decisions that need to be made. We would see that office as playing a significant role.

Senator LAUTENBERG. A few weeks ago, the Center for Public Integrity published a report indicating that over $4 billion of clean-up costs have gone unrecovered, and an additional $5 billion might be lost due to the statute of limitations over the next several years. What can the EPA do to assure that it recovers these costs as soon as they are available from responsible parties?

Ms. BROWNER. To date, we believe that $4.3 billion is eligible for recovery of the $7.1 billion spent—that $4.3 billion is eligible for recovery. We have recovered $2 billion from responsible parties and we are working on the additional $2.3 billion. We anticipate that $2.8 billion is unrecoverable, that is a combination of costs that we

are not able to recover and situations where the responsible party is essentially bankrupt, not available for cost recovery.

We have initiated 46 cost-recoveries in Fiscal Year 1993, and will initiate another 88 in Fiscal Year 1994. The six-year statute of limitations begins to run at the time of the remedial action, so it is not as if suddenly at a date certain all of these are going to disappear in terms of our ability to collect the costs. We are carefully monitoring the dates as they relate to specific sites and our activities.

Senator LAUTENBERG. About a year ago, a official in EPA's Region II legal office stated that he didn't intend to enter into settlements with de minimis parties at Superfund sites. How many de minimis settlements have occurred in New Jersey, and why haven't there been more? Has there been an obstacle to working through this kind of efficient way of resolving issues?

Ms. BROWNER. I don't know why someone would say that. It is certainly my policy, and it is something we will move forward, to use de minimis party settlements. We have used them historically. There have 90 at 65 different sites. As I said previously, 5,000 parties have been affected by this.

It is labor intensive, but it is extremely important. It is something we will put the resources into to make sure that where appropriate we are getting de minimis settlements.

Senator LAUTENBERG. Good.

Some of the critics of Superfund point to $10 billion spent—you heard the questions that were asked by one of my colleagues—and only 164 sites cleaned-up. By the way, I think the fact that the question was asked about what is the difference between construction and conclusion means there has to be a little clearer definition.

It is confusing when one sees what amounts to a water purification plant, or a facility like the one I saw last week in New Jersey at a lead site, where it took extensive machinery installations to grind up this slag that had very high lead content in it so that it could be moved to a hazardous waste facility, because in its present form it was not even fair to ask people to work in it. When you look at 164 sites, it sounds like a relatively small number $10 billion later. Why hasn't more been done, especially in these last 12 years? It took a long time to get anything moving.

Ms. BROWNER. Mr. Chairman, as you said previously, I think you have to look at this program in segments. If you look at what has happened in the last 3 years, the program has changed dramatically compared to the first 3 years. When this program came into existence it was a brand new idea of how to deal with these very pressing problems. It took time to put the program in place, to work out the wrinkles, to do the assessments, to develop the technologies.

Now I think we are much better positioned to move expeditiously. We are sort of through the start-up phase, if you will, and we are into an implementation phase. I think it is also important that when we talk about numbers, not just to talk about the actual numbers, but to look the effect on the public health, to look at the restoration that has occurred. It is not just simply saying it is this number versus that number; it is the environmental indicators, the

health indicators, that have been achieved through this program. They have been very significant.

Senator LAUTENBERG. I think that information has to be presented in terms of the population that is affected by the potential risk at these sites, what the risks are. I think it would be very helpful.

There is a lot of accomplishment there, and it is hard to get your hands around it because it still has a continuing O&M operation, as we have learned, and that wasn't really thought about. In 1986 when we were doing the renewal, we talked about the O&M possibility and included that in the law, but it was not as well understood as it is today, when you've seen the complications of getting rid of the material that is there first, and then making sure that there is not a return of pollution through ground water contamination or undiscovered contamination in the soil.

Ms. BROWNER. If I could offer a few statistics that might be helpful; at the sites where the work has commenced, if you look at them across the board, nearly 13 million cubic yards of soil have been remediated. Over 20 billion gallons of ground water have been treated. Over 1 billion gallons of liquid waste have been properly disposed of. Over 330 million gallons of surface water has been cleaned and treated. Those are significant numbers. I think sometimes we forget the magnitude of the job and focus on other things.

Senator LAUTENBERG. Some of those numbers are a little abstract. I think if we could say a pile taller than the Empire State Building, or something of that nature, that measures in terms of a geographic water supply, or something of that nature, I think it would be very helpful. There has been a lot of material moved over these years. It ought to be recognized.

When I visit some of the sites I am astounded by the complicated scope of plants that are built. They look like they are manufacturing plants. In fact, some of them are the equivalent of a chemical manufacturing plant, as it accumulates, stores, separates, and neutralizes the effects of this. We are looking at a pure chemical operation.

I asked last week when I was visiting the lead site, whether or not the infrastructure material that was used was prototypical. Was it unique to this function? They said, no, this is standard in smelting, etc. So the equipment is there, the fact that it has to be replicated to remove what was once originally manufactured is in fact quite startling information. I think it is possible.

No one here, certainly not this Senator, stands against examination or reform of the system. We want it to be better. But it is not fully realized, and I hear it from comments at this hearing, what the extent of the work that has been done is. It is very significant, and it gets better all the time as people learn their tasks.

Last question: Some think that EPA's risk assessments at Superfund sites are unrealistic, and that they require clean-up against the possibility that a person will eat spoonfuls of dirt everyday for the next 70 years. Is this true? Are the risk assessments unrealistic? Are risk assessments at Superfund sites based on substantial data that can be scientifically supported?

Ms. BROWNER. Risk assessment is a complicated process. Essentially what we attempt to achieve with our assessment of these sites is, one, to determine what is at the site. Sometimes that is a

very complex process. There is more than one waste that has been disposed of at the site.

The second question then is how does it, or could it, affect human health, or our natural resources, or our ground water, for example. Those are the two questions essentially, and sort of generally speaking, that are posed.

We have undertaken a process of reviewing the risk assessments and how they were done. We have gone back and looked at ones done previously. We are doing new ones.

The science advisory board began a process of reviewing our risk assessment process in April 1992. They have just submitted a draft report. They are generally supportive.

This is a group of scientists who have looked at the process. They are generally supportive of what the agency is doing. That is not to say there aren't some changes that need to be made, but that on balance there is a recognition that the agency has done a good job in terms of risk assessments.

Senator LAUTENBERG. I think it is important that EPA detail more explicitly, more graphically, what it is that has happened, or is expected to happen, at these sites, because often you will hear the allegation that you heard this morning, that here is a site on this mountain top, nobody ever goes there; a few birds pass by every now and then; and what the devil, why bother?

The fact is that if it is recognized—and in Boston there has been a debate for years about what caused the death of a child named Jimmy, and there is a fund. The father appeared before us, and was still distraught, even though that child had died some years before, about the impact on the family, having to leave his job every couple of days for chemotherapy or radiation for the child, and the terrible pain and anguish that the family experienced in the years of this child's dying. One of the siblings said, "Daddy, why don't we laugh in this house? We never have fun. In other houses, they always have fun." Then there is the stack of the bills. It was $130,000, if memory serves me correctly. This man made $30,000 per year.

Too often, we remove it from the human experience. It becomes a plethora of statistics, you will forgive me, cubic yards, millions of gallons, etc. When it touches a child, or a family, as it so often does, it becomes a different thing.

So I think if EPA can do some work highlighting what it is that Superfund is about. It is not just an exercise in growing trees or something of that nature.

It is less than amusing, but kind of ironic, when you are asked questions about what was the original estimate, $63 billion? Federal sites—DOD, DOE—are gigantic polluters. The cost for some of those is really, to use the old expression, a mind-boggler. You are talking about $1 billion at one site, potentially. It is easy to say we ought not to have responsible parties. In this case, the Federal Government, I think, ought to pay for it, if it is proven that they are responsible for it.

So we have a lot of work to do. We dare not let the negatives overtake the positives. By the same token, we shouldn't be protective of a program that is as complicated as this. It needs amend-

ment, change, I am going to be one of the first persons to salute that.

I look forward to working with you and your staff. I thank you very much for being here today.

With that, this hearing is adjourned.

[Whereupon, at 12:17 p.m, the subcommittee was adjourned, to reconvene at the call of the chair.]

[Administrator Browner's prepared statement follows:]

PREPARED STATEMENT OF CAROL M. BROWNER, ADMINISTRATOR, ENVIRONMENTAL PROTECTION AGENCY

INTRODUCTION

Mr. Chairman and members of the Subcommittee: Thank you for the opportunity to appear today to discuss Superfund. As you know, Superfund is one of this country's most ambitious environmental programs. First enacted in 1980 and then amended in 1986, this law marks the first attempt by any nation to provide a comprehensive program to respond to chemical accidents and emergencies, and to clean up sites contaminated by hazardous chemicals.

To meet those ambitious goals, Congress provides EPA with an annual Superfund budget that dwarfs virtually all other EPA programs. For example, in FY 1993, Superfund is operating under a budget of $1.5 billion, almost 22 percent of EPA's total budget. Moreover, billions more are being spent by state and local governments, private companies, and other parties responsible for cleaning up hazardous waste sites.

We are meeting here today to begin answering critical questions: Are we getting full value for our money? Is the Superfund program structured and administered as well as it could be? Are communities and the environment being protected from the risks posed by hazardous chemicals at the least possible cost? Is EPA reaching quick, consistent, and reasonable decisions? How can EPA, state governments, local communities, and private businesses work together more cooperatively as partners in cleaning up hazardous wastes?

Superfund is now more than 12 years old. In that time, we have learned much about analyzing and comparing risks at specific sites. We have developed new, more effective, and less costly cleanup technologies. We have become much more sensitive to the value of local community involvement. We have also learned that the scope and complexities of the problem are far greater than EPA and others envisioned. Most important, after 12 years, we know that the Superfund program is still flawed, and that we have to improve it even more to fulfill the promise envisioned in 1980.

It is appropriate after 12 years that we pause and take stock of this vitally important program. This morning I want to share with you my sense of what's working and what isn't working. And I want to give you an overview of what the Clinton Administration—and EPA—intend to do to make Superfund a more efficient, effective program in the future.

CURRENT STATUS

This country's multi-billion dollar investment in short-term emergency response and long-term site cleanup undoubtedly has reduced the risks posed to human health and natural ecosystems. Of equal interest to the American people, such risks have been reduced at thousands of readily identifiable sites in communities all across the country. For example:

- Superfund's removal program has led to thousands of short-term cleanups that reduced or eliminated serious risks to local populations. EPA has taken over 3300 removal actions at nearly 2600 sites; Agency actions have included the removal of leaking, deteriorating drums, the provision of alternate drinking water supplies when existing sources are threatened or contaminated, the temporary relocation of residents during cleanup, and the draining and disposal of waste from pits in order to prevent chemical seepage into groundwater. Known immediate threats have been eliminated at all National Priorities List (NPL) sites. In addition, EPA routinely assesses all NPL sites to determine whether additional removal actions are necessary.
- Long-term, remedial cleanup is progressing, or completed, at numerous sites across the country. Of the 1202 sites currently listed on the NPL and the 54 sites previously deleted from the NPL, EPA has completed the construction phase of long-term cleanup at 164 sites. At some sites, like those with contami-

nated groundwater, treatment systems are in place but will need to continue operations for a long time before cleanup goals are met. Remedial investigations and feasibility studies are underway or completed at almost 1200 sites, remedies selected at 800 sites, remedial designs underway or completed at nearly 700 sites, and remedial actions underway or completed at nearly 500 sites.

- Applying Superfund's liability provisions, EPA's enforcement efforts have achieved over $7.4 billion in cleanup commitments from potentially responsible parties (PRPs). Almost 70 percent of these commitments have been achieved since EPA initiated its "Enforcement First" policy in 1989. Under this policy, EPA attempts to get responsible parties to perform cleanups before it uses taxpayer dollars to perform the cleanup itself. PRPs now are committed to do 72 percent of new Superfund remedial action work, up from 32 percent in 1988. In Fiscal Year (FY) 1992, PRP cleanup commitments represented a nine to one return on the taxpayer funds which EPA invested in enforcement. President Clinton's proposed budget for FY 94 continues this commitment to "Enforcement First," because private party funding allows us to leverage EPA and Superfund resources more effectively and clean up more sites more quickly.
- The existence of Superfund has begun to change corporate and municipal behavior by giving an incentive to voluntary actions. Because private and public parties now are more aware of the problems—and costs—associated with the generation and disposal of hazardous wastes, they are developing new, innovative ways to prevent pollution before it is generated, and minimize pollution that cannot be prevented completely. Moreover, because the presence of hazardous chemical wastes can impair the value of businesses or corporate property, more and more private companies are conducting voluntary cleanups prior to the sale of corporate assets. In these cases, voluntary actions in the private sector are providing additional, indirect environmental benefits beyond those attained by Superfund directly.
- Superfund has spurred technological advances. Since passage of Superfund in 1980, both the public and private sectors have invested substantial funds to develop new, more effective, and less costly hazardous waste control and cleanup technologies. For example, at McClellan Air Force Base in Sacramento, California, a pilot project involving the state government, the U.S. Air Force, EPA, and seven private companies is developing new remediation technologies for treatment of contaminated soils. EPA has identified over 150 innovative technologies now being used to treat groundwater, soil, sludge, and sediments. Through FY 1991, 42 percent of the technologies selected for use at Superfund sites were developed since the inception of Superfund. Because such technologies can be used to clean up wastes in other countries, investments driven by Superfund requirements in the United States may help us become a major exporter of hazardous waste remediation technologies.

EPA is not working alone in achieving these results. Superfund has spurred the development of state cleanup programs. Under Superfund and their own laws, states have contributed enormously to the cleanup of our national hazardous waste problems.

CURRENT PROBLEMS

Clearly, the people of the United States have derived a number of benefits from the implementation of Superfund over the past 12 years. For example, the most serious threats to local communities at contaminated sites have been abated, many sites are being restored to productive use, and investments in advanced cleanup technologies are helping reduce cleanup costs and open export markets to U.S. companies.

It is just as clear, however, that we are paying a very high price for these benefits. We are paying a high price in terms of administrative and cleanup costs incurred by EPA, and a high price in terms of the transaction and cleanup costs incurred by companies and state and local governments potentially liable for contamination. We are paying a high price in terms of uncertainty and wasted time. We are paying a high price in terms of the basic fairness—or unfairness—of the program. Finally, we are paying a high price in terms of the anxiety and frustration of local communities concerned about delays in cleaning up contaminated sites.

Let me mention some of the specific criticisms leveled at the Superfund program:

- The pace of cleanup in many instances has been too slow. For example, even after extensive investigation and remedial construction, some groundwater cleanup projects can take decades, and even then we cannot be sure if cleanup goals will be met. The *average* time from an initial RI/FS to completion of a remedial action project at a Superfund NPL site is 10 years. In addition, several

years often elapse between the preliminary assessment and the RI/FS. Superfund generally is criticized for spending too much time studying sites, and at some sites studies of complex contamination problems resulting from co-mingled wastes have stretched on for years. The testing of innovative technologies on-site also takes additional time, especially if a different technology finally is chosen. Additional time is spent negotiating and litigating over the responsibility for, and the cost and extent of cleanup. These delays, even if sometimes explainable, can add significantly to the total costs of cleanup.

- The EPA/state relationship has been strained in some areas. The law assures state involvement in all aspects of Super fund (e.g., identification of NPL sites, enforcement negotiations and settlements, remedy selection). The law also requires cleanups to meet the requirements of state environmental laws more stringent than federal requirements. Moreover, states are responsible for paying a percentage of the cost of remedial actions paid for by the Trust Fund, as well as the cost of maintaining remedies after they are constructed (*e.g.*, operating a groundwater treatment system for 20 years). Because so much responsibility—and cost—is shared, the federal and state governments sometimes disagree on issues such as remedy selection, enforcement, and long-term state operation and maintenance costs at Superfund sites. In some cases, states want EPA to defer NPL listings so they can address sites directly under state law. I had first-hand experience with some of these problems in Florida, and I understand the importance of the federal/state Superfund partnership, a partnership that needs to be strengthened.
- Significant concerns have been raised about Superfund liability, principally as it relates to transaction costs and fairness. The President has expressed his concern that too much money is going to lawyers and not enough to cleanups. A study by the RAND Corporation indicates that, for large industrial firms, transaction costs have represented 20 percent of Superfund outlays at NPL sites. This percentage probably will decline as sites emerge from the negotiation stage, where we would expect relatively higher transaction costs, and site cleanup begins. Nonetheless, the large drain of PRP dollars to lawyers and consultants is a troubling aspect of the current Superfund program. In addition to transaction costs, small waste generators are concerned that the law treats them unfairly, forcing them to contribute more to Superfund cleanup than is justified by their proportional contribution to wastes at contaminated sites.
- An area of special concern relates to the liability of generators and transporters of municipal waste. Studies indicate that ordinary household waste may contain small percentages of a variety of hazardous substances. Although EPA as a matter of policy does not pursue municipal solid waste generators or transporters, other responsible parties are not prevented from pursuing them for cleanup costs. The issues raised by these lawsuits have given rise to a major debate on the fairness of municipal liability.
- The question of how stringent cleanup standards should be is controversial and complex. The law does not specify a cleanup target level, and EPA's own policy in this area has been unclear. As a consequence, cleanup goals differ site-by-site across the country, costs vary as well, and the Superfund program is criticized for inconsistency. It is important to clarify "how clean is clean." Should cleanups allow some contamination to remain if public health is protected, or should all sites be restored to their original state, no matter what the cost? Should permanent remedies always be preferred no matter what the cost, if less costly remedies are sufficiently protective? Should cleanup target levels be site-specific or consistent across the country? Should the level of cleanup of land and groundwater be dependent to some extent on the post-cleanup use of those resources?
- The Superfund program also has been criticized for taking longer to clean up sites and for providing less protective remedies in neighborhoods with low-income or ethnic minority populations. Although concerns about environmental justice are not unique to Superfund, economic and ethnic fairness within the Superfund program are matters of great concern to EPA. We currently are gathering data on the characteristics of communities surrounding Superfund sites to determine whether in fact the program has a disproportionate impact on disadvantaged communities.

THE PROCESS FOR CHANGE

The reauthorization of Superfund gives Congress, the Clinton Administration, EPA, and the public the opportunity to reevaluate how the program has worked for the past 12 years, and to make changes that will help Superfund work better in the

future. This Administration is committed to making the changes needed to improve Superfund, whether they are administrative changes that can be implemented by EPA on its own, or legislative changes that must be enacted by Congress. Moreover, as we implement this process of change, we are committed to working closely with all other parties—state and municipal governments, the private sector, environmental organizations, the research community, and other federal agencies—that have an interest in the smooth, efficient operation of Superfund.

At this time I see four distinct, yet interrelated steps in this process of change—creation of a new NACEPT committee, administrative revisions, Superfund database improvements, and assessment of legislative options for improving Superfund.

NACEPT COMMITTEE

First, in order to assure that EPA is fully informed about the views of outside parties, I am seeking to create a new subcommittee within the National Advisory Council on Environmental Policy and Technology (NACEPT). NACEPT is an important advisory group to EPA, and its Superfund subcommittee will be made up of representatives from state and municipal governments, private industry, environmental groups, local community organizations, and universities. I will be asking this NACEPT committee, led by John Sawhill, to initiate a broad public dialogue on how Superfund can be improved, and this dialogue will involve *all* stakeholders inside and outside government. I expect this committee to hold a series of public meetings this summer and then, as soon as possible, present me with its assessment of available options—both administrative and legislative—for improving Superfund. The EPA staff will work closely with the committee in identifying options and gathering information on the program.

ADMINISTRATIVE REVISIONS

Second, I have created an EPA workgroup headed by the Deputy Administrator to examine different act ions the Agency could take on its own to improve Superfund. This workgroup will look at ways to:

—Enhance fairness and reduce transaction costs;
—Accelerate cleanups, especially through an expanded use of model cleanup plans and encouragement of voluntary cleanups;
—Enhance public participation and address environmental equity issues;
—Encourage technology development;
—Clarify cleanup goals;
—Improve remedy selection; and
—Strengthen the role of states.

This workgroup also is going to oversee and evaluate implementation of several initiatives to improve Superfund that already are underway within the Agency. For example:

- The *Superfund Accelerated Cleanup Model (SACM)* will encourage faster action to reduce risks. SACM establishes a continuous site assessment process, creates a cross-program approach in EPA's regions for coordinating actions at a site, encourages early actions to eliminate or reduce risks, and ensures cleanup of long-term environmental problems. This pilot program will be implemented fully in FY 1994, at which time we will begin to assess how much time is being saved through this approach.
- The *presumptive remedy initiative* will help streamline and accelerate remedy selection at similar sites. Presumptive remedies should expedite the process currently used to evaluate and screen alternatives for certain categories of sites (e.g., wood treatment sites and municipal landfills) and focus evaluations on the limited number of alternatives selected at similar sites in the past. For example, EPA has found that at municipal landfills, because of the heterogeneous mixture of large volumes of municipal solid wastes codisposed with industrial or hazardous wastes, cleanup remedies must focus on containment of wastes, rather than on waste treatment or destruction. Use of "presumptive remedies" will allow EPA to reach remedy decisions at similar sites more quickly and at less cost. EPA is testing some of these remedies and expects to issue its first presumptive remedy guidance this summer.
- The *compliance monitoring and enforcement initiative* will strengthen EPA's post-settlement efforts to assure responsible party compliance with orders and decrees. This initiative includes the development of compliance and management systems that help track the performance of responsible parties.

- EPA's *cost recovery initiative* will improve cost documentation, develop cost recovery cases that maximize returns to the Trust Fund, and reduce transaction costs by limiting the number of cost recovery issues that can be litigated.

This workgroup also will assess options and proposals for improving Superfund that have been developed outside EPA. I have asked the workgroup to present me with its recommendations for EPA administrative actions as soon as possible.

SUPERFUND DATABASE IMPROVEMENTS

Third, EPA is taking steps to improve its Superfund databases. We recognize the need to collect reliable, consistent data that will allow us to analyze operation of the Superfund program and assess results. The available data are not sufficient to analyze program strengths and weaknesses, risks reduced, and costs. Accordingly, we are working with outside groups to develop a plan to strengthen our Superfund databases.

There are two efforts underway in this area. The first is the development of a unified, user-friendly database that contains core, site-specific information extracted from existing Agency databases. Documentation for use inside and outside the Agency will be developed as well.

The second effort, now in the early planning stages, will collect new data to fill in gaps in our current understanding of Superfund. This will involve gathering data (*e.g.*, type of site, number and type of PRPs, size of orphan share, cause of contamination, risks at the site, benefits of cleanup, land use costs, populations at risk) from site documents and from EPA Regional staff. This effort will allow EPA and other researchers access to consistent, reliable, understandable data for program analyses. It also will allow EPA to provide information essential to all of us during the Superfund reauthorization process.

LEGISLATIVE OPTIONS

Fourth, I have asked EPA staff to expedite its assessment of the various proposed options for improving Superfund through legislation. A number of legislative options already have been identified, and I expect to see many more in the months ahead.

At this point I am not certain that we need legislative fixes, or what those fixes should be, but I intend to work closely with the NACEPT committee and the appropriate Congressional committees in the analysis of any new legislative proposals that could improve the operations of Superfund. EPA will participate actively in the hearing process, so Congress will have the benefit of NACEPT and Agency analyses. If it becomes clear that administrative improvements are not sufficient by themselves, and that new legislation is needed, the Administration will work with this committee and others to develop new legislation as expeditiously as possible.

Let me add a word about liability. In any amendments to Superfund, we should be careful to preserve the principle of site-specific polluter pays liability. The parties that contribute to the contamination should be responsible for the cleanup. As noted earlier, the President has expressed strong concerns with the inefficiency of the current liability scheme, and we would welcome suggestions on ways of changing the program's operation in order to improve fairness and reduce transaction costs.

THE FUTURE FOR SUPERFUND

Today, more than 12 years after the enactment of Superfund, the job we face cleaning up hazardous waste sites seems more formidable than ever. Even though hundreds of sites have been cleaned up over the past decade, thousands more have been identified. Besides the sites already listed under Superfund, many more may be in need of some form of remedial action. The Superfund program as we know it today poses a huge challenge and huge costs, and potential future costs are even larger.

Despite what we have learned about administering a large, national cleanup program, many more questions remain to be answered. What is the most effective role state governments could play? Can we assess liability more fairly? How can we reduce transaction costs? How can we improve and speed up the remediation of sites owned or operated by federal and municipal governments? How can we increase the benefits that result from every dollar spent on Superfund cleanup? And the most vexing question of all: How clean is clean?

There is a great deal at stake in this reauthorization of Superfund. Huge costs are at stake, both the costs associated with cleaning up contaminated sites, and the costs associated with sites that can't be used because of contamination.

In this regard, I want to express my thanks to members of Congress for developing legislation that encourages voluntary site cleanup as a part of urban redevelopment. We need to get contaminated property back into productive use, for the sake of the economy as well as the environment.

In the same vein, the debate on Superfund reauthorization must consider the issue of natural resource productivity and lost economic opportunity resulting from the contamination of natural resources. The Congress must clarify the priority to be given to natural resource values when sites are selected for remediation and when cleanup levels and technologies are determined.

Also at stake in this reauthorization is the issue of environmental justice. We are seeing more and more evidence that economically disadvantaged, ethnic minorities are bearing a disproportionate share of environmental risk in this country. As Superfund is reauthorized, we must ensure that the economic and health interests of minorities are given proper consideration when sites are selected for remediation and when cleanup levels and technologies are determined.

Because so much is at stake, nearly every aspect of Superfund should be open to scrutiny. The four-part process for changing Superfund that I have established at EPA emphasizes openness and inclusiveness. It emphasizes a partnership with all stakeholders. The reauthorization of Superfund will affect the health of millions of Americans for decades to come, and it will affect the economic prosperity of the whole country. It is exceedingly important that we do the best possible job.

During the coming months, my staff and I will assist you any way we can. We intend to work closely with other federal agencies affected by Superfund. The Clinton Administration is committed to achieving the goals of Superfund in the most efficient, effective way.

Mr. Chairman, thank you for this opportunity to address the Subcommittee. Now I will be happy to answer any questions you may have.

SUPERFUND REAUTHORIZATION

THURSDAY, JUNE 10, 1993

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON SUPERFUND, RECYCLING, AND
SOLID WASTE MANAGEMENT,
Washington, DC.

CONTRACT AND FISCAL MANAGEMENT

The subcommittee met, pursuant to notice, at 9:58 a.m. in room 406, Dirksen Senate Office Building, Hon. Frank R. Lautenberg [chairman of the committee] presiding.

Present: Senators Lautenberg, Smith, and Boxer.

OPENING STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator LAUTENBERG. Good morning, our subject this morning is a review of the management—or I might say mismanagement—of the Superfund program.

I am glad to be joined by my colleagues, Senator Boxer and Senator Smith.

We are going to hear today some deeply disturbing reports from the GAO and the EPA Inspector General that suggest pervasive mismanagement of programs managed by EPA, including the Superfund program.

The General Accounting Office is going to present the results of an investigation requested by me, Senator Pryor, and Congressman Dingell which shows recurring deep-seeded problems with the management of EPA's outside contractors—contractors who perform billions of dollars worth of Superfund clean-ups. In addition, both the GAO and the Inspector General will report today on serious problems in EPA's accounting for Superfund dollars and its reporting of information critical to the operation of the Superfund program.

We are going to hear about apparently intentional, fraudulent misreporting of Superfund information—information that shows that more was accomplished than really took place. This was mismanagement by EPA personnel in a report to Congress, and there was collusion alleged between EPA regional officials and contractors to provide false information—deceptive information—to the Congress.

We are going to hear about a $1.4 billion discrepancy between EPA's databases containing financial information on Superfund.

We will further hear about up to $1 billion worth of Superfund clean-up costs that were not charged to responsible parties because the Bush and Reagan Administrations adopted a highly conservative approach to accounting for the costs to be charged to the polluters.

We are going to hear about problems with management of accounts receivable and not tracking statutes of limitation that could result in substantial loss of monies owed to the Government simply because of a failure to keep the books.

Unfortunately, this isn't the first time that these issues have been raised before this subcommittee concerning the management of this program under the two previous Administrations.

In 1989 Senator Durenberger and I issued a report and held hearings criticizing the Bush Administration's management of the Superfund program, raising numerous concerns about EPA's handling of its outside contractors. Unfortunately, despite consistent prodding by Congress and internal agency watchdogs, virtually nothing was done about the problem by EPA.

In 1991, in the face of continuing evidence of the problem, I asked the GAO to undertake a tough audit, which is being released today, to investigate the Superfund alternative remedial contracting strategy—or the ARCS, as they are known—contractors, and also to get to the bottom of allegations that the taxpayers were penalized for expenses because of sloppy accounting by contractors and the careless management and audits by EPA.

In 1992, as part of the EPA appropriations bill, I urged the agency to make contracts management a higher priority and to dedicate the resources necessary to address the problems with Superfund ARCS contractors.

Today we will hear from the IG and GAO that the problems with Superfund are systematic of a pervasive culture of management that existed at EPA that cuts across all of its programs and affects every one if its missions.

We will further hear of important first steps taken by outgoing Administrator Reilly and incoming Administrator Browner to restore accountability to the EPA's handling of taxpayer and corporate dollars.

The severity of the management problem at EPA—and, indeed, at many Federal agencies—will require more than internal administrative action.

President Clinton has recognized this by virtue of his appointment of Vice President Gore to undertake the national performance review, with its comprehensive examination of how the Federal Government does business.

A major part of that review deals with the contract and fiscal management of the Government. I applaud the administration for so quickly recognizing and grappling with these long-festering issues; but we need not wait for the end of the administration's review to begin remedying the disturbing information revealed by our witnesses today.

I am announcing four steps this day that will begin the process of reform at EPA.

First, I intend to introduce legislation to restore accountability and proper management of contracts by EPA. My legislation, simi-

lar to a proposal offered by Congressman Conyers, would require changes in the way EPA does business and with increased penalties for those who break the law.

My legislation will include the following components:

One, establish civil penalties against contractors who charge the Government for unallowable, illegal costs like parties and presents and charitable contributions. It is outrageous but true that contractors can get away with charging the Government for these items without facing any penalties. That's going to change.

Two, cut back on the huge umbrella contracts, which authorize billions of dollars of work under vague terms and that have been most subject to abuse.

Three, I'm going to ask that we require better documentation to justify expenditures in areas such as contractor travel where there has been a demonstrated potential for inflated bills.

Four, I want to create a new chief information officer at EPA whose charge will be to integrate, streamline, and make consistent the 500 different EPA computer systems so that the managers of any program, not just Superfund, would be able to rely on basic management data that is not now available to the agency.

Second, I am requesting the EPA Inspector General to perform a no-holds-barred, top-to-bottom management review of EPA's information and fiscal management practices in the Superfund area.

While EPA has taken some important steps in the past year to address its contract management problems, there has been no comparable systematic review of the fiscal and data collection practices of the agency.

The appalling lack of basic management information about Superfund and other programs and other program expenditures must be addressed.

I expect the IG's review to be completed within the next six months and to offer administrative and legislative reforms that the Superfund Subcommittee can review and recommend to the Senate if warranted.

Third, I am writing to Administrator Browner requesting her independent review of the findings of the GAO report and recommendations from her to come back to me within 30 days. Senator Pryor and Congressman Dingell are joining me in this letter.

Given Administrator Browner's commitment earlier this spring to independently review EPA's contract management practices, I'm confident that she will act quickly to eradicate the legacy of the Bush and Reagan Administrations' management.

Fourth, I am requesting of the Attorney General, Janet Reno, that she review any criminal laws that could apply to the allegations of falsification of data that the inspector general has uncovered. If the criminal laws do not currently allow for prosecutions for this type of behavior, I have asked the Attorney General for her recommendations within 60 days for changes to those laws.

Senator Boxer has joined me on this letter. The message has to be very clear to agency employees that any attempts to falsify their accomplishments—or, even worse, spend Government money to buttress their false claims—will be dealt with severely.

The basic information on which program performance is measured by Congress and on which agency managers rely must be ac-

curate and complete. No matter how supportive of EPA's mission—and I am certainly one of those—we cannot allow the agency to focus exclusively on the environmental protection missions to the exclusion of sound fiscal and contract management practices. The agency must ensure that taxpayer dollars are being spent in the most efficient and responsible manner.

Now I invite my colleagues to make a short statement if they would like to.

Senator Boxer?

OPENING STATEMENT OF HON. BARBARA BOXER, U.S. SENATOR FROM THE STATE OF CALIFORNIA

Senator BOXER. Yes, I would, Mr. Chairman.

I want to thank you for having this hearing on the waste of taxpayer dollars in the Superfund contracting program. Obviously, all Senators are looking for ways to save money and at least spend money wisely.

I really appreciated the report that you requested. It certainly is an excellent starting point for a review of this contracting out program. The report details numerous instances of abuse and mismanagement of the EPA's effort to administer taxpayer-funded toxic waste clean-ups at Superfund.

I do plan to join with you in asking EPA Administrator Browner to promptly respond to the issues raised by this report.

However, as disturbing as the report's individual stories of contractor waste is, the fact that agency-wide problems inherent in the way EPA manages its contractors pave the way for those abuses.

So today we are not only looking at Superfund's specific abuse; we are looking at EPA-wide management problems that have simply come to light in the Superfund context.

I expect that the witnesses you have called today will address these system-wide problems and the administrative and legislative reforms that will enable EPA to better manage its contractors, both under Superfund and its other programs. Mr. Chairman, your legislation sounds very much on target to me.

Successfully confronting this country's hazardous waste problem is vitally important to the future economic health of our country and to my home State of California. We have over 20 communities who face the economic pain of military base closures, and without the environmental clean-up to allow the conversion of these former bases to new, productive uses, we risk these communities becoming ghost towns. Part of it certainly is the toxic waste at these sites.

It is unconscionable that the Federal Government has allowed the squandering of its limited resources. Sadly, it seems to me, Mr. Chairman, that the EPA and its contractors may have learned all the wrong lessons from the abuses of the defense contracting process.

Mr. Chairman, in closing, let me say to you this: over in the House, for 10 years I was involved in trying to clean up the abuse and fraud and waste in the military. I think you are exposing it right here. We cannot afford it. We cannot stand by and let it happen.

I saw contractors in the Defense Department charge taxpayers for executives who kenneled their dogs in fancy kennels, and I saw the expensive dining tabs and all the rest of it—country club dues. I'll tell you this: if that's where this is leading us, I say to those contractors who may be sitting out here today, "Watch out, because if you don't clean up your act this chairman is going to do it for you."

We are at a point where we cannot afford to waste a dollar, and that's just as simple as it is. We are not going to stand for it.

Thanks, Mr. Chairman.

Senator LAUTENBERG. I thank you for your comments, Senator Boxer.

I know of your involvement in the other body, and I am delighted that you are on this committee and subcommittee because your help is going to be invaluable.

It is ironic, that as we talk about ways of reducing a budget deficit, we see dollars thrown away. It shouldn't happen and it won't happen.

Senator Smith?

OPENING STATEMENT OF HON. ROBERT SMITH, U.S. SENATOR FROM THE STATE OF NEW HAMPSHIRE

Senator SMITH. Thank you, Mr. Chairman.

I would just add to the remarks of my colleagues by saying the frustrating thing about these kinds of revelations is the fact that we find it out after it has happened, and then we find out that billions of dollars of taxpayers' money has been wasted, which we can't afford to waste.

I have not had a chance to review specifically your legislation, but I hope that in your legislation we'll have some mechanism that will almost on a day-by-day basis monitor what is going on here so that we don't have to have this kind of situation develop.

It is outrageous. People are out there paying their taxes, and an Administration asking for more taxpayer dollars. If you continue to feed a pig, the pig is going to get bigger. It is about time we start showing some restraint instead of just dumping Federal dollars into all of these programs with absolutely no accountability.

It is not just in the subject of this hearing; it is across the board in Government. I am sick of it, and it is about time that we start having some accountability here.

We heard it in the Pentagon. We hear it here. We hear it everywhere. It is just wrong. The comment was made in the statement from Mr. Martin, the Inspector General, that EPA needs a financial accounting system that provides complete, consistent, reliable, and timely data for decision-making and control of assets. That is important. That goes right to the heart of it.

It is easy to sit back and say, "OK, we wasted billions of dollars. Let's clean it up." We ought to be out there monitoring so we don't have to have a hearing like this.

I know that is your goal, Mr. Chairman. I think hopefully we can not politicize it. If some of it happened in the Reagan or Bush Administration, so be it. We could probably go back into the Carter

Administration and find some of it, and we'll probably have some of it in the Clinton Administration.

But the bottom line is let's see if we can implement something and make people that are doing business with this Government understand that taxpayers have just had it and we are not going to just keep pouring money into programs. That is a darned good reason why we ought to go back to zero-based budgeting and stop this baseline garbage which is causing it to begin with.

Senator LAUTENBERG. I take it, Senator, you are fully supportive of this review?

Senator SMITH. Strong message to follow, Mr. Chairman.

Senator LAUTENBERG. Thank you very much.

I do want to say that we have tried to formally deal with this problem the first time formally in 1989. It has been pervasive. This is an agency—and I absolutely will not make any excuses for it—that was left literally hanging in limbo in 1985 when the first Superfund program expired. It was begun in 1980. That's when the legislation was enacted into law. It was late 1980. I would, therefore, note that President Carter signed it, but it wasn't during his watch.

I agree with you that we ought not to politicize this, but we ought to recognize where and when it happened.

I share your view on eliminating waste any place. I managed a pretty good sized business, and there isn't a place around that has lots of people involved where some problems don't arise, but it is up to management to stay on top of it.

As much as I'd like to, we are not going to be able to manage it day-to-day any more than I was able to manage a company with, at that time, 16,000 employees at about 50 locations, but what we did do is have systems in place that reported reliable information in a timely fashion so that we could identify where problems exited. That's been the problem here.

Senator SMITH. I agree. Just a brief response so we can move on here.

I think that you and I both know—you have been in the Congress a lot longer than I have—that the oversight responsibilities of Congress are very, very difficult to administer. It is very easy for Government agencies to provide more paperwork, more reports, and more material to read, and it becomes a game. We keep them on hold. We keep throwing paperwork at them. Finally, Lautenberg or Smith will go off onto something else and we'll be all right. That's simply the way this place works, and that's why we have these major problems, because you have to stay so specifically focused on one area to accomplish anything, but we have so much to do with 13 different standing committees, all of these with oversight responsibilities.

It is difficult. I agree with you. We certainly can't manage it day-to-day, but, out of 250 million people, we ought to be able to put someone in place who have not only some fiscal responsibility, but also some morals when it comes to the taxpayer dollars. I think we ought to screen the people we put in place to do this kind of work a lot more carefully so that we don't have to hear about it after it happens.

That's my point. It is not directed at you, Mr. Chairman, at all. It is simply a frustration that I have expressed not only in this particular case, but in many other cases.

Senator LAUTENBERG. I agree with the distinguished Senator from New Hampshire and hope that he'll join me in legislation that I have introduced, and that is to reduce the temptation to be influenced or to cheat by eliminating gifts to Senators, much the same as I and many other corporate chiefs have done. In my company, if a person in the Purchasing Department took gifts from a supplier, that was tantamount to a termination.

We had the same thing in a major legal department where we leased millions of square feet of space, and I made sure that no one was allowed to take any gifts from anybody who was going to rent us space, because even a relatively small lease in business might be $100,000 a year. If one rented 10,000 square feet and you took a 10-year lease, that's a lot of money and there are lots of temptations.

So I look forward to having Senator Smith join me in eliminating the first step, and that is the seduction of people who run agencies.

With that, we'll move on to hear our witnesses.

I would ask if you would come to the table Mr. Hembra, Mr. Martin, Mr. Guimond, and Ms. Harper.

Senator SMITH. Mr. Chairman, while they are coming at the table may I just say I have to apologize to the chairman and the witnesses. I do have to leave, and I'm going to try to get back. I apologize.

Senator LAUTENBERG. We're happy to have you participate. The record will be there, for examination.

All right. The procedure at this subcommittee is to try to move things along, even though we haven't been successful so far, and that is to allow a limited period of time for a presentation that should amount to a summary because there is a lot of data to present.

We are going to allow 10 minutes for Mr. Hembra and Mr. Martin. Rich Guimond and Ms. Harper, we have talked before, certainly a lot with Mr. Guimond, so we will ask you to do it in five minutes. This is not intended to be discriminatory, but it is intended to move the process.

With that, Mr. Hembra, you are first. We welcome your testimony.

STATEMENT OF RICHARD L. HEMBRA, DIRECTOR, ENVIRONMENTAL PROTECTION ISSUES, GENERAL ACCOUNTING OFFICE

Mr. HEMBRA. Good morning, Mr. Chairman and Senator Boxer.

We are pleased to appear today to shed some light on concerns expressed about Superfund contractors spending excessive amounts of public funds on activities that do not advance the clean-up of hazardous waste sites.

Over the years we have identified numerous deficiencies in EPA's management of contractors. As you are well aware, EPA makes extensive use of cost-reimbursable contracts. These contracts require effective oversight because they reimburse the contractor for all allowable costs, giving the contractor little incentive to control them—especially indirect charges.

However, EPA has not provided the oversight necessary to prevent contractors from overcharging the Government millions of dollars.

We have also pointed out in the past that EPA has recovered from responsible parties only a small fraction of the billions of Superfund dollars that it has spent. This has occurred because EPA has not fully recovered its indirect costs and interests.

In the last year or so, EPA has begun to exercise greater control over its Superfund contracts. However, based on its past track record and new agency management, a sustained commitment will be needed within EPA to ensure that corrective actions remedy the problems. In fact, even though EPA has started scrutinizing contractors' indirect charges, we are still finding instances of tens of thousands of dollars in unallowable or questionable costs being claimed by contractors in their indirect cost accounts.

I'd like to spend the next few minutes discussing EPA's contracting strategy with a focus on program management costs.

EPA uses contractors to perform remedial studies, design cleanup remedies, and manage actual clean-up activities. EPA has awarded a total of 45 alternative remedial contracting strategies, or ARCS contracts, to 23 firms. The total cost of the contracts if all options are exercised is over $6 billion.

The work performed under ARCS contracts is divided into program management and remedial planning. Costs that support non-site-specific and multiple site activities are charged to program management. Costs incurred for a specific site are charged to remedial planning.

Program management costs can be either direct costs such as labor, travel, and supplies, or indirect costs such as fringe benefits and corporate overhead costs.

Nearly half-way through the life of these ten-year contracts, contractors have spent $105 million, or 23 percent, on program management activities. Although these costs have declined, they remain much greater than anticipated.

There are reasons for this. EPA built in excess capacity and increased the number of contractors to avoid future capacity shortages. This was a problem they experienced in their previous contracting strategy; however, the workload never materialized, in part because of policy changes that EPA did not consider in its original workload estimates.

Interestingly, although EPA was aware of high program management costs as early as 1989, it did not initiate action to avoid additional cost to the Government until 3 years later.

EPA has now increased the ARCS workload by shifting work from other contracts as they expire. These actions helped reduce overall program management costs to about 15 percent in fiscal year 1992; however, as the chart to my right would indicate, excess contract capacity remains in some regions that may ultimately cost the Government millions of dollars in unnecessary program management costs.

Moreover, nearly one of every five ARCS contractors continues to charge program management costs in excess of 20 percent of total contract costs.

Let me shift my attention to EPA's future efforts to control program management costs.

EPA is developing new contracts, known as response action, or RACS, that will supplement and eventually replace the ARCS contracts. This approach will enable EPA to reduce the number of contractors to between 20 and 30, as opposed to the 45 they now have. EPA also plans to reduce the contract duration to 5 years as opposed to 10 years, with a 5-year renewal option.

Because the contracts will be procured over the next 4 to 5 years, EPA will be able to adjust the RACS design as needed for future procurements.

Finally, detailed cost breakdowns and a new award fee process should make it easier for EPA to monitor and control costs. However, major policy initiatives now being developed at EPA, such as efforts to expedite clean-ups, and the Superfund reauthorization, may further affect the RACS workload.

In conclusion, as the number of Superfund sites and their clean-up costs continues to escalate, EPA has the dual responsibility to eliminate the health and environmental dangers posed by these sites quickly and cost-effectively.

With scarce Federal resources and competing demands, it is important that EPA maximize the use of available funds. To date, EPA's performance in this area is poor, with a high proportion of Superfund dollars still being spent on program management and indirect costs.

Four years after becoming aware of this problem, EPA has taken some actions, but in our view has failed to adequately address the problems' root cause—too much ARCS contract capacity.

It is my understanding that EPA is going to report this morning that they, in fact, do not have a capacity problem. I'm surprised by this. This is the first we have heard about it. Certainly it does not jive with information that was made available to us, and as we developed during the course of our review

Quite frankly, given the information as displayed on this chart, I am extremely surprised that they are going to be able to provide sufficient work to the ARCS contractors over the remaining life of their contract.

As a point in fact, I think our chart is being kind to EPA because it does not talk in terms of work hours spent, but simply displays work hours ordered, which means that the actual work is a few years down the road.

To EPA's credit, in designing the new RACS contracts EPA has included key features that should help control program management costs and maintain appropriate levels of contractor capacity. However, their cost effectiveness depends on EPA's ability to incorporate in a timely fashion new policy initiatives and program changes in response to ever-changing Superfund workload needs.

Mr. Chairman, this concludes my prepared remarks. We will be prepared to respond to any questions that you might have.

Senator LAUTENBERG. Thank you very much, Mr. Hembra.

Just before we hear from Mr. Martin, I just wanted to be sure I understand that chart. Could you just review that chart while you are there? Just tell us exactly what you've got.

Mr. HEMBRA. What this chart displays, Mr. Chairman, is the percentage of the line of effort work hours ordered from ARCS contractors. This was as of 9/30/92. I apologize for the dated information but, quite frankly, that gets at a point that we have been hitting on for years, and that is the information systems that EPA has in place makes it difficult to get very timely information.

What this chart shows is both the hours available to the ARCS contractors and actual hours ordered by EPA for the contractors to perform work.

Senator LAUTENBERG. The 100 percent is the——

Mr. HEMBRA. The 100 percent represents the hours available in the contract.

Senator LAUTENBERG. The hours available. And the bottom describes the various regions that were reviewed in this——

Mr. HEMBRA. It describes the ARCS contracts as they relate to work being done in the specific EPA regions.

Senator LAUTENBERG. This covers all of the regions, does it not?

Mr. HEMBRA. Yes, it does.

Senator LAUTENBERG. Because in a couple of the bars there is more——

Mr. HEMBRA. That's correct.

Senator LAUTENBERG. Right. OK. So that the percentage of hours goes from a maximum of about 60 percent; is that right?

Mr. HEMBRA. Close to 60 percent, Mr. Chairman.

Senator LAUTENBERG. Down to something less than 20?

Mr. HEMBRA. Something on the order of about 15 percent.

Senator LAUTENBERG. Right. And now, again, just for the record, describe the relationship of the dark part of the bar to the full bar.

Mr. HEMBRA. The lighter area of the bars represent—in fact, the entire bar for each region represents the hours available for the ARCS contractor working those regions.

Senator LAUTENBERG. All right.

Mr. HEMBRA. The shaded area represents work that EPA has ordered to be done by the contractors.

Senator LAUTENBERG. OK. So the difference between the light and the shaded section represents unused resources——

Mr. HEMBRA. That's right.

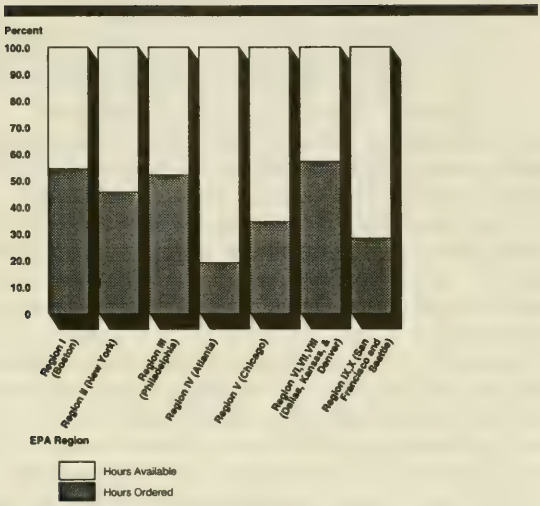
Senator LAUTENBERG.—that were paid for by the Government?

Mr. HEMBRA. Only paid for in the sense as it relates to the program management costs.

Senator LAUTENBERG. Management. OK. That's fine. I thank you very much.

[The chart referred to follows:]

Figure 2.6: Percent of LOE Hours Ordered From ARCS Contractors, as of September 30, 1992



Source: GAO analysis of EPA data.

Senator LAUTENBERG. Now, Mr. Martin, you heard the rules. You've got 10 minutes to present your comments.

STATEMENT OF JOHN MARTIN, INSPECTOR GENERAL, ENVIRONMENTAL PROTECTION AGENCY

Mr. MARTIN. Thank you, Mr. Chairman.

This morning I'll be discussing recently completed and ongoing audit work in three areas of Superfund: EPA's contract management, financial management, and information management.

Over the years, EPA has given top priority to achieving its program goals and carrying out its environmental mission, but the secondary consideration given to good administration and management activities resulted in significant problems that will take time to correct.

Recently, EPA made major efforts to bring about a change in the culture which allowed various kinds of mismanagement to occur. But, unfortunately, our audits continue to find weaknesses in current activities at EPA, and this shows us that the battle for good management of the agency's resources is far from over.

EPA has always relied on an extensive network of contractors to help carry out the Superfund program. Most Superfund work is performed under cost reimbursement contracts because there are a lot of unknowns in cleaning up hazardous waste sites.

The relationship EPA has with its contractors depends on the type of work or services the contractor provides. With its administrative support contracts, the working relationship was so close that it resulted in contractor employees performing personal services for EPA staff, while the technical enforcement contractors, on the other hand, were not monitored closely enough.

EPA uses administrative support contractors to carry out activities in the program such as developing databases and forming statistical analyses. In March we issued a report on the agency's management of these contracts.

The agency administered the six Superfund support contracts in our sample in a manner which made them appear to be personal services contracts. With a shortage of in-house staff, EPA tended to step over the line and used support contractor employees to assist in carrying out its own day-to-day activities.

We found EPA staff were providing continuous, direct supervision of contractor employees. This is wrong. In effect, EPA employees were augmenting their own staff with contractor employees.

While we can understand EPA's sense of urgency in getting its mission accomplished, lax contract management leads to situations where contractor employees are treated as part of the EPA family, and arms-length administration of contracts becomes impossible.

We also found EPA work assignment managers were not adequately documenting the technical direction they provided to administrative support contractors. Clear and adequate documentation is needed to serve as a safeguard against contractor bias; that contracts are not performing inherently Governmental functions; and that EPA personnel, not contractors, were making the final decisions on behalf of the agency.

In another report we issued in March we found that EPA had not adequately managed its technical enforcement support contractors. These contractors are used both to identify companies and individuals who may have contributed to hazardous waste sites, and later to monitor the clean-ups performed by these responsible parties.

This report consolidated the results of 15 audits of responsible party clean-ups that we did from 1988 to 1991. In putting together this capping report, we took particular care to give the agency credit for corrective actions already taken and to update other recommendations to address those matters which had not yet been fully resolved.

In contrast to the administrative support contractors, the technical enforcement contractors were not monitored closely enough.

The TES contractors often did not complete responsible party searches within the prescribed time periods. In the two regions we audited, time extensions were required in over half of the sites we looked at. Some of the searches for potentially responsible parties took more than 3 years longer than expected.

In one region, the cost of searches increased from 19 to 153 percent. In the other region, cost increases ranged from 90 to 312 percent of the original estimates.

The causes of these increases were poor estimates of the work needed and the contractors' use of personnel who had no expertise in performing this type of work.

We also reported weaknesses in EPA's management of TES contractors in the clean-up phase of their work. In three of the four regions we reviewed, EPA project managers rarely made site visits to evaluate how well the TES contractors were overseeing clean-up work. Lack of quality assurance monitoring allowed instances to occur like the one where a responsible party involved in the clean-up complained that the TES representative was conducting monitoring of the clean-up activity in a car parked 150 feet from the site.

Financial management integrity is especially critical for the Superfund program since all costs must be carefully documented for cost-recovery purposes. We have been auditing EPA's financial accounting system for over 10 years, and this morning I'd like to mention a couple of problems specifically related to Superfund.

EPA's conservative policy of excluding certain costs from its indirect cost pools resulted in a materially understated indirect cost rate in the Superfund program. Over the years, this policy has excluded over $1 billion in indirect costs.

The audit report we issued in February of this year reported that allowable, allocatable indirect costs were still being excluded from the indirect cost pools. These expenditures included costs for activities such as research and development and depreciation expenses. If these costs had been included and properly allocated as part of total clean-up costs, the average fiscal 1988 indirect cost rate—which is the latest the agency is working on—would have been $353 per hour instead of the agency's proposed rate of $66 per hour.

In total dollars, this resulted in the exclusion of more than $225 million in fiscal year 1988 that could have been recovered from responsible parties.

To address this matter, EPA is using the rule-making process as a means to implement a full accounting concept which would include additional allowable costs as part of the indirect rate.

Another area where Superfund costs are not being recovered concerns the so-called "double Z" accounts. These accounts were set up to accumulate pre-remedial clean-up costs for Superfund sites that do not yet have identification numbers which allow for direct charging.

In fiscal year 1992, the cumulative amount in the ZZ accounts exceeded $66 million and accounted for about 5 percent of total Superfund expenditures. Our audit found that more than half of the $4 million of costs included in our sample were improperly recorded in the ZZ accounts.

I'd like to spend a few minutes on EPA's resource management program.

EPA has over 500 computerized information systems providing data on a wide range of environmental programs. In performing 15 internal audits of these systems over the last 4 years, we have reported serious deficiencies both in the overall management of the information systems and with individual systems and computer centers.

EPA does not have a comprehensive quality assurance program to ensure the reliability of its information systems. As a result, many EPA offices have developed their own systems which they consider more trustworthy. This is wasteful duplication.

EPA developed the CERCLA information system, which they call CERCLIS, to help manage the voluminous amount of data generated by the Superfund program. In 1990, we reported that CERCLIS reports contained material errors due to inadequate controls over documentation, software changes, and testing.

In 1992 we followed up on this report and found that EPA had made some improvements in response to our 1990 report; however, EPA had only partially implemented or not implemented at all half of our recommendations, allowing certain problems to continue—especially data quality problems.

Finally, our annual reviews of EPA's Superfund progress reports to the Congress have identified weaknesses and inaccuracies.

Regions have interpreted data definitions differently, leading to inconsistent data entry and inaccurate national totals. EPA has not had adequate quality controls to prevent or detect data errors. We have found regions claiming Superfund accomplishments they could not support.

During our review of the 1991 report data, we received a complaint that one region improperly claimed large numbers of site inspections and preliminary assessments as reportable accomplishments. When we examined the data reported on inspections and assessments for this region, we found that this category was significantly overstated.

Upon learning this, the agency removed this misreported data from the report. We also checked this category of data in other regions, as well, but found no deficiencies of this type.

The agency has not yet issued this report of 1991 activities in a final form.

The Office of the Inspector General is committed to helping EPA become a model for financial integrity and accountable management, and we will continue to work with agency management to achieve this goal.

This concludes my statement, Mr. Chairman. I'd be pleased to answer any questions you may have.

Senator LAUTENBERG. Thank you very much, Mr. Martin.

I just would note on page 16 you make reference to "We found at least six systems which contain data on the ADP inventory." ADP was the acronym for the company that I ran, and I wanted the record to reflect very clearly that the ADP here is a generic reference, right, and not about a failure by a company called ADP to report correctly?

Mr. MARTIN. Absolutely.

Senator LAUTENBERG. Thank you very much, for the record.

I would now call on Ms. Harper.

STATEMENT OF SALLYANNE HARPER, ACTING ASSISTANT ADMINISTRATOR, OFFICE OF ADMINISTRATION AND RESOURCE MANAGEMENT, ENVIRONMENTAL PROTECTION AGENCY

Ms. HARPER. Mr. Chairman, Senator Boxer, I appreciate this opportunity to address you today not only on the issue of Superfund contract management, but on agency-wide management initiatives and problems that we have at the Environmental Protection Agency.

Over the last several years, contract management has received a great deal of scrutiny before various Congressional committees and subcommittees. The nature of the disclosures resulting from this scrutiny identified problems in the contracts management arena not only in the EPA, but also throughout the Federal Government.

I can assure you that contracts management is of critical concern to the agency.

On March 10, 1993, Administrator Browner spoke on this issue before Congressman Dingell and the members of the subcommittee on Oversight and Investigations of the House Committee on Energy and Commerce. She noted that the reports of the agency's problems in handling contracts were reflective of greater underlying problems in the agency's culture. During the course of the hearing, the administrator outlined her initiatives for getting to the root cause of these problems. I would like to describe our approach to these problems and the initiatives the administrator has designed to address them.

Last spring EPA established the Standing Committee on Contracts Management and directed it to perform an in-depth analysis of the agency's contract management. The committee's report was significant, not only because of the deficiencies that it reported, but also because it discussed for the first time an EPA cultural philosophy of valuing our mission over our management.

It is the administrator's intent to change this cultural philosophy. Implementing the many valuable recommendations made by

the committee will not have a meaningful impact on improving contracts management unless we change the underlying culture.

The administrator's initiatives are centered on three principles: accountability, good management, and discipline. The key points of accountability are the administrator's senior management team. Accountability will be further enhanced through the establishment of a high-level council of the agency's managers. This council is responsible for not only integrating management with mission, but also for integrating the use of all of EPA's various resource management tools.

The administrator has also established a pilot program to diminish the agency's present reliance on a small group of contractors. This program involves breaking up some of EPA's umbrella contracts, which are large, mission-oriented, level-of-effort type contracts with broad and varied statements of work.

Their use has resulted in vulnerability such as performance of work outside the scope of the contract, contract shopping, and improperly directing the subcontractors of our prime contractors.

The smaller replacement contracts will have better defined statements of work, be more competitively priced, and provide opportunities for more businesses, including small businesses, to contract with the agency.

To assess the agency's management of its resources, the administrator has initiated a base review for fiscal year 1994. This review will provide information on how resource allocation decisions are made and what resource constraints encumber us in executing our mission. It will enable the agency to determine if current resources can be redirected to help solve some of the contract management problems we are discussing today.

The administrator has also emphasized the need to establish a disciplinary system which conveys to EPA managers and staff the serious consequences resulting from resource management violations. This system will be communicated to every employee so that EPA staff and its managers understand they will be held accountable for their actions and any contract-related offenses.

We have comprehensive, ongoing initiatives to overhaul our training program in the area of not just contracts management, but we have expanded that to all of our resource management, including our grants, inter-agency and cooperative agreements.

The agency now requires that each contract manager prepare a contract management plan to discuss potentially vulnerable areas and how they will be minimized before a contract is awarded. We are formalizing an acquisition planning process so that the programs can simultaneously chart their contracting, their resource, as well as their training needs.

The role of the Standing Committee on Contracts Management has been expanded to focus on all of our extra-mural resource management. The groups is now known as the Resource Management Committee and its membership will include all senior managers who are responsible for extra-mural resources or oversight.

Clearly, there are many areas where improvements are still needed, and we are continually examining, refining, and reassessing our approach to Superfund contracting.

In conclusion, Mr. Chairman, if you were to ask me whether EPA is any better now than we were a year ago, I would have to answer with a qualified yes. There have been pockets of improvement. There is greater sensitivity to and awareness of contract management and related issues across the agency. With greater frequency people are thinking about management and mission and not solely mission.

We will continue our efforts until we are successful in instilling an agency culture which supports both the letter and spirit of sound resources management.

I would be happy to answer any questions that you may have.

Senator LAUTENBERG. Thank you very much, Ms. Harper.

Mr. Guimond?

STATEMENT OF RICHARD GUIMOND, ACTING ASSISTANT ADMINISTRATOR, OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE, ENVIRONMENTAL PROTECTION AGENCY

Mr. GUIMOND. Thank you very much, Mr. Chairman.

I appreciate the invitation to appear before the committee today to discuss Superfund Contract Management issues.

Over the last several years, Superfund has received a great deal of scrutiny before various Congressional Committees and Subcommittees. I'm happy to say that today Superfund is at the forefront of contract management reform within EPA, and I welcome the opportunity to update you on accomplishments, plans, and improvement initiatives.

Specifically, I would like to summarize our accomplishments in the area of improving the ARCS contracts and to briefly describe the improvements incorporated in new contracts to replace ARCS.

We worked hard to improve our contracts management to ensure efficient program performance. As the committee is aware, the alternative remedial contracting strategy was designed in the mid–1980's to provide a second generation of Superfund contracts to implement our Superfund program. Key features of the ARCS strategy included increasing competition, the award of a greater number of smaller, regionally based contracts, promoting project continuity by use of the same contractor and various phases of remedial activities and, most importantly, to decentralize contract management to EPA's regional offices, allowing those closest to the contracts to exercise management control.

Overall, this family of contracts is an improvement to the services previously available to the Superfund program. However, it did have some shortcomings.

Early in 1991 the agency was the subject of criticism for the management of the ARCS contracts. Primarily, EPA was charged with allowing Superfund contractors to spend too much money for some activities such as program management.

The Agency established a Task Force to review this activity. The ARCS Task Force Report issued in October of 1991 contained 30 Superfund recommendations in 6 functional areas. Currently, 29 of the 30 Superfund recommendations made by the task force have been implemented and his improved our program's performance.

Let me just site one example—a major recommendation concerning the need to develop better independent Government cost estimates for activities under the ARCS contracts. Assessment of existing cost-saving tools was performed, and specific guidance provided in August of 1992. Regions are now conducting independent estimates with great success, and we expect these to continue to improve as we gain more insights and experience in performing them.

I would like now to focus our remarks on two key issues highlighted in the GAO report—excess capacity and high program management costs.

Originally, our capacity was based on the projected Superfund workload developed in the 1986–1987 time frame. These projections were subsequently increased and contracts awarded to ensure flexibility to promote competition among contractors for new work.

Following the awards, we found that the actual construction workload was not as high as expected. This drop in workload was the result of policy shifts, including a large increased emphasis on encouraging responsible parties to build remedial remedies.

The ARCS contracting capacity was explicitly addressed in the agency's task force report of 1991. The task force concluded that the appropriate contract capacity was available in 7 of 10 regions. For Regions 4, 9, and 10, the task force recommended further evaluation of capacity on noting that Region 4 was already targeting two contracts for termination. These took place in 1992.

As noted, we further evaluated the capacity in Regions 9 and 10. This review, completed in March of last year, asserted that 87 to 98 percent of the ARCS available contract capacity is likely to be used up over the next ten-year period. In our most recent national capacity review we did in the latter part of last year, we believe that we now have acceptable utilization in most regions.

It was the task force's overall determination that excessive national capacity does not appear to be an issue and has been substantiated by the need for new RACS contracts in four regions before 1996, which is 3 years ahead of the scheduled expiration of the ARCS contracts.

Our most recent information indicates that the ARCS west area has the largest available capacity, while actual utilization rates in Regions 4 and 5 have been lower than expected.

We accept the recommendation of the GAO report and will continue annual reviews of contract capacity and utilization across the regions and make adjustments as appropriate.

Program management costs were—the category was established to capture and track costs that cannot be attributed to a particular site. This category includes many things, including liability insurance premiums, administrative support costs, and equipment costs.

Program management costs are compared by looking at them across the overall contract expenditures. We have made significant progress in reducing program management costs. For example, in 1992 we have reduced them to 15 percent, and so far this year we are working toward getting to 12 percent, and we are currently slightly over 12 percent.

It is noteworthy that EPA has achieved a real reduction in total program management costs of about $6 million from fiscal year 1990 to fiscal year 1992, even though the level of remedial work

almost doubled during this period, going from 75 million to about 140 million.

I'd like to talk briefly here, as our time runs out, about the RACS contracts.

We have come up with RACS contracts in various areas to replace the ARCS contracts as they run out. These contracts are going to have a number of improvements to take into consideration those errors or those learning experiences that we have seen through the overall years of implementing the ARCS contracts. We believe that we are on the right track to improvements along these lines, and we believe that by following all these closely we will ensure program management costs are minimized, while being able to be responsive to clean-up work as quickly as possible.

Thank you very much.

Senator LAUTENBERG. Thank you very much, Mr. Guimond.

I guess one of the first questions, because there is direct conflict in response, has to do with the estimate of excess capacity. EPA and GAO have a markedly different view. I don't want to engage you and Mr. Hembra in a debate here, but where can the difference come in?

Mr. Hembra, do you have a view on this?

Mr. HEMBRA. Well, my suggestion, Mr. Chairman—quite frankly, I thought that EPA would be discussing a fairly recent initiative in terms of looking at the continued cost-effectiveness of certain ARCS contracts, but that was not the case. So we pretty much had available to us, we would believe, the information for the basis of the position EPA has taken.

Quite frankly, I was not persuaded. Our look at the capacity issue seems to us to be pretty clear and would suggest that there are contractors out there that EPA would need to look a little more closely at whether or not it is more cost-effective to keep them on board or terminate that contract for the convenience of the Government.

To help the subcommittee, Mr. Chairman, I would certainly agree to have our staff sit down with EPA and sort through what appears to be a pretty dramatic discrepancy in the information that has been provided to the subcommittee and then report back to you on that discussion.

Senator LAUTENBERG. Yes. I think that is probably a better way to do it. There must be data upon which to make judgments. I'd like to have that information available to the committee with the back-up that helps you arrive at the conclusion that you did.

Now we have a vote on. As a matter of fact, I think there are two, which may cause me to recess for a little while. I would hope that all of you have the time available to stay with us until we get back. We will go on with a few things now and then ask your indulgence as we go to the floor and then come back.

Mr. Martin, you talked about errors in one EPA region's report about the accomplishments of Superfund. Could you expand a little bit more on the circumstances and the reasons for the errors, as you saw them?

Mr. MARTIN. Mr. Chairman, as I am sure you are aware, we are required to audit the agency's annual Superfund report to the Con-

gress. The agency is now in the process of finalizing its 1991 report, so it is substantially behind.

In the process of doing that, we actually received a complaint from an EPA employee who told us that Region 9, our San Francisco office, was engaged in misreporting data that would eventually wind up in the report to the Congress. It had to do with the statistics that are recorded for the accomplishments known as preliminary assessments and site investigations.

When we went out and looked at that category of information in that region, we found that, in fact, the office responsible for that work was making invalid claims and had claimed 275 accomplishments in those two categories over a period of years that were basically just paper exercises where they had created a paper trail that would apparently indicate that they had legitimately done the work that was necessary under EPA's own rules to make those valid claims when, in fact, they could never be considered valid claims.

What they were doing was taking three large Superfund sites which they had, dividing them into much smaller units, and then making individual claims for the smaller units within the sites. EPA's own rules for how they count things would not allow that to be done.

And so we eventually completed both an audit—we call it a management implications report—and an investigations report which we have referred to the regional acting administrator in order to consider possible disciplinary action against the employees involved.

Senator LAUTENBERG. Thank you very much.

I hate to interrupt the process, but, as I said earlier, we are now getting down to where I must go to the floor.

We will recess for 15 minutes. We'll reconvene at 11:25.

With that, please excuse me.

[Recess.]

Senator LAUTENBERG. We'll call the subcommittee back to order and apologize for what is a tradition around here. We turn absences of 15 minutes into 30 without any problem. Sorry. There was a delay between votes.

Mr. Martin, I would like to continue to pursue the first question that I had for you, and to which you responded about your view of what it was that caused these errors in Region 9's reporting errors or false reports.

Without asking you to make a court judgment here, is there a basis perhaps that these false reports could be grounds for criminal prosecution under laws as presently drafted?

Mr. MARTIN. Mr. Chairman, I know of your sensitivity to the legal process from previous conversations we have had, and this matter was discussed with the United States Attorney's Office for San Francisco, and it was their determination that the way false claims and false statements laws are now drawn it would not sustain a prosecution of a matter of this kind.

Now, what actually occurred was that the senior EPA employee involved in this matter and others was able, by using their position, to get other employees and even contractor employees to create documents in the EPA official files which were basically

meaningless documents—I mean they had no value—to supposedly sustain the accomplishments that they were claiming.

That creates a lot of problems. Obviously, we are engaging a contractor. We are paying them to do the work. We are asking EPA employees to do basically meaningless work. That has a lot of implications for the morale and the process of that whole organization.

So, in consideration of all that, we have referred this whole matter now for administrative action within the agency, and that is still pending, and that's why I have been a little cautious in how I have described the activity, because I don't want to prejudice anyone's individual rights as this matter is being reviewed.

Senator LAUTENBERG. That's fine. There is, however, no immunity from prosecution if a law is violated. And I understand your reluctance to make a judgment. Frankly, I commend it. But if there a conspiracy to deceive, then I guess, that also raises the potential for an action by the Justice Department in this case.

We'll leave that as it is. The fact is that I raised the question and you responded as you saw appropriate.

Is the incident in Region 9 an aberration, or does that raise the suspicions about other regions, as well, about Superfund's accomplishments, about the numbers that EPA has boasted about?

Mr. MARTIN. There are probably at least two answers to that question.

First of all, once we realized what was going on in that particular office we went to other regions and looked for that same activity and could not find it. So, as far as we know, that region was the only office that did that particular thing to improve their apparent accomplishments.

However, from a systems point of view—which I think is also your concern—we, from time to time, do see questionable statistics in certain categories of accomplishments.

I understand that when we audit the agency's claims we do it on a sampling basis. There is no possible way for us to audit all their accomplishments. Sometimes we find no problems with certain categories of numbers. Other times we find minor differences. Other times they are fairly substantial.

I think the broader answer to your question is that there may be data problems with the way accomplishments are claimed, but they don't relate to this particular kind of activity to the best of our knowledge.

Senator LAUTENBERG. So it is possible that, though there may be incorrect reporting, it could be accidental or carelessness that might sway the outcome. But, again, you are reporting a general feeling about what you have seen because you qualified your answer by saying you can't audit every transaction that relates to that, or every bit of data that is produced.

Mr. MARTIN. That's correct.

Senator LAUTENBERG. I want to ask Rich Guimond a question.

How do you explain what is going on? I want to point out to the EPA members here this is not an accusation directed at you personally. You are here professionally to represent your agency, and I appreciated something that Ms. Harper said earlier when responding to whether or not the success was as measured, and you

said "a qualified yes." That's candid, and that's what we have to do. We want—both you, and I, and the other colleagues at the table—to make things right. This isn't designed to be a witch hunt. It is designed to correct problems.

We have to go back in history to analyze it before we come to any conclusions, and the committee will continue to provide oversight, so I'd like you to feel comfortable because you may see changes that you think are in place to correct the problems.

But I'd like to know, Mr. Guimond, what do you think is going on with the numbers in the fiscal year 1991 Superfund accomplishments report that give us the distortions that are claimed by the IG and GAO?

Mr. GUIMOND. I think you've got two separate issues here with the 1991 accomplishments. You have the information on the PASIs that Mr. Martin talked about in Region 9, and then you have the array of other accomplishments that are in there that we have put forth.

It is my understanding that our staffs have been meeting together to compare what we believe the various categories should be and where the information comes from, and we are resolving most of the issues on that at this particular stage.

Why I think that complicates this a little bit is that, because Superfund is such a complex thing, over the years in some cases definitions have changed for very legitimate reasons, and therefore how they were accounted for in previous years may slightly differ from how they are accounted for in current versus future years. That complicates pulling the information out, and therefore one has to agree on the appropriate definition one should go with for this particular report. That's why it requires certain discussion among our staff to make sure we are doing something legitimately.

I think you'll find that has occurred.

Frankly, in addition to some of the stuff, there were some mathematical errors that have been identified through the review process, and they are being corrected to go back and forth to make sure that those are established. But I think most of what we have seen in that year are being resolved among us. The biggest issue is the Region 9 investigation that has been out there, and they have reported back to their regional administrator to have him look into it.

We will make any additional guidance out, if necessary, to take a look at that. But I believe they are looking very intently at what the issue is now.

Senator LAUTENBERG. So, even if definitions were different, you wouldn't deny that there could have been mismanagement, false reporting?

Mr. GUIMOND. There could have been. There is always the ability to have that. We personally, I think, believe in talking to most of the staff across the EPA, that it is certainly not widespread. People are generally hard-working and are trying to accomplish their jobs, trying to figure out what the agency wants and what people want.

I know, in talking with—this does not excuse anything, but in talking about the situation in Region 9, I believe that part of their underlying motivation here was that they have a lot of very, very large sites, and the agency does not have a good way of accounting

for all the work that goes on at these large sites, and they believed this was an appropriate way to do this.

That may or may not be the case. Like I said, our regional administrator is going to investigate that.

But I think we have to be responsive to our people that are trying to do stuff and find ways to account for their work.

Senator LAUTENBERG. But there were more specific and direct charges laid down here. I have to say that it would be hard to excuse this by reason of different definitions. That even provokes a question of: where was headquarters' guidance on the definitions? Are people defining tasks in different ways in different regions and different sections of EPA?

Obviously, that's one of the things that leads to inaccurate reporting and settlements. Was headquarters plugged into this in such a way that they were able to exert the management standards that ought to be met?

Mr. GUIMOND. We provide definitions to our regions on various accomplishments that they are supposed to take track of and report back to us, and we check on that periodically. We do expect the regions and regional management to be the primary link in ensuring what their people are doing on a day-to-day basis. From that standpoint, we don't take that degree of oversight. We send out review teams periodically and we do those kinds of oversight activities.

Now, as Mr. Martin said, only one region, from his review, has taken this change this way, so that gives us reason to believe that most of them are using the definitions that we believe appropriate for accomplishments.

Senator LAUTENBERG. So you are saying Region 9 was the only one that didn't understand, and all the other regions understood very clearly?

Mr. GUIMOND. It appears that way from his review.

Senator LAUTENBERG. That would be unusual, to say the least, but let's leave it at that. We're going to continue to review it.

Mr. GUIMOND. Lest there be any misunderstanding, I'm saying Region 9 appears to be the only one that did it that way, from his review out there. Whether there was intent or not, I think we have to leave that to regional management's review.

Senator LAUTENBERG. I'm reminded that the inspector general's report said that the region fabricated about 275 false site investigations. Was there no structure that enabled headquarters to recognize that this was going on, because it is the bulk of the new accomplishments list?

Mr. GUIMOND. I'm sorry?

Senator LAUTENBERG. There are 275 false site investigations. How is it possible that, since that is the bulk of the new accomplishments listed—they are talking about things that they have accomplished. How is it that back at headquarters that volume of falsehood wasn't recognized?

Mr. GUIMOND. Each year we negotiate targets out there with each of the regions as to what they say they believe they can do in an area and what they are then going to accomplish, and we compare across those.

Senator LAUTENBERG. But is there no audit trail that checks closely enough on the region? You're talking about a number of such giant magnitude. Were there not discrepancies between Region 9 and others that caused you to take a second look that raised some kind of a red flag?

Mr. GUIMOND. We do a lot of PASIs across the Agency each year, and so I think from the standpoint of what they are going to be, we generally expect the regional management do that first line of looking at what those are going to be.

It is when we then take a look—if you look across—there are many, many preliminary assessments and ASIs done over the history. There are thousands. We are looking in the order of nearly 30,000 or so of these things, so you can see historically, over time, 275 is not big into the broader picture.

We would take a look, an expect regional management to be the initial management look at what it is, and then only on a piecemeal. But, if we had some particular reason to believe it was really out of line, we'd step in.

Senator LAUTENBERG. You'll have to take a look at the IG report, because there was a rapid step-up in the number of sites that were reported upon, and that, I believe, should have occasioned a second look.

When so many of this increased number are accused, it suggests that the information was gathered and falsified. It sounds like the system has a breakdown there that someone ought to——

Mr. GUIMOND. We'll be glad to. I'll take a look at it, Senator, and we'll take a look at what it is.

Senator LAUTENBERG. We'd like you to report, when you've had a little more time, back to the committee with your analysis, please.

Mr. Hembra, problems that you report with EPA's contract fiscal and information management raise a question about whether or not these problems are unique to Superfund, or is this an EPA general problem, or is it part of a Government-wide problem?

Mr. HEMBRA. In one sense I would like to say it was just a Superfund problem, but, based on GAO's work, not only looking at EPA or looking at the Superfund program, but looking at other agencies throughout the Government, it is a Government-wide problem.

It is a problem to varying degrees, depending on the particular agency, but it is a serious problem certainly in EPA, and certainly with regard to——

Senator LAUTENBERG. In EPA generally?

Mr. HEMBRA. EPA generally, and certainly with regard to Superfund in terms of contracting and fiscal and information management.

Senator LAUTENBERG. That brings me then to another question, which says: compared to other agencies, how would you compare the steps EPA has taken so far to deal with the deficiencies identified in your report?

Mr. HEMBRA. As you know, Mr. Chairman, we have done alot of work for you on the Superfund program. Up until about a year or so ago I would say that we were underwhelmed by what the agency had done. But there have been a lot of things that the agency has started—most of it, quite frankly, because of the pressure from your subcommittee and others—that we think have real potential.

The Superfund accelerated model that they are working toward hopefully will improve program implementation. The steps started before Administrator Reilly left and have been endorsed and picked up by Administrator Browner. They appear to be good starting points.

The only point of caution I would raise—and it is because of the years and years of experience we have had looking at the agency and how those programs are being managed—is that there has to be a sustained commitment by senior management within the agency to make sure that those actions do, in fact, work and, if they are not working, that there is someone that can step in, in a timely fashion and identify where the problems are and make further revisions.

It appears that the structure is there. It appears like the agency's culture with regard to mission over management is changing, that there is more attention being placed on how the programs are being managed, and I think that's positive.

Senator LAUTENBERG. Yes. As I said earlier, I am not going to make any excuses for EPA, but this is a problem I think inherent in many Government agencies, and EPA was particularly profound because at the end of 1985—most of you at the table were around to see this—there was a serious notion that EPA or Superfund might not survive, so there was this hiatus during which there were almost no guarantees of future employment and it destroyed morale. It also sent people scurrying for other jobs.

As a consequence, we had a deep trough between the end of the program in 1985 and the resumption of the program in 1986.

Also, the question of continuity and that's something that one day we'll have to take a look at. It is a very complicated department, or has a complicated mission with all of the assignments given to it, a lot of them newly developed or newly expanded, newly changing.

So, again, there are no excuses because fundamental management steps should be taken when you are dealing with taxpayer money. There are certain basic steps that have to be taken to see that things are run right.

Again, I draw on my own experience and tell you that we always worried about these things in my company about how each of the "regions" was operating. I issued directives as the CEO of the company, but then I'd go out there and I go to the trenches. That's what a general has to do.

I found out that many of the things that were laid down as law were ignored because of expediency or disagreement with the policy.

There is a lot of discussion about whether or not Superfund should have a separate revenue source or if it should be turned into a public works program.

Do either Mr. Hembra or Mr. Martin think that the problems that were described today could be eliminated by turning this whole Superfund program into a public works program?

Mr. HEMBRA. Responding to your question based on work GAO has done over the years, what our work has shown is that the implementation of the Superfund program and the management of that program has not been well done.

Senator LAUTENBERG. Say that again, please.

Mr. HEMBRA. That the implementation of the Superfund program, the way in which that program has been managed, has not been well done. There have been a lot of problems.

Those problems can be fixed. There are indications that EPA hopefully has turned a corner and is beginning to address some of the ones I mentioned earlier.

Based on our work, before I would suggest perhaps what might be viewed as throwing the baby out with the bath water in terms of a dramatic change in Superfund program, that we stay on top of problems and see whether or not actions that EPA intends to take in fact get taken and fix that program.

There may be a point in time where we find that the solutions aren't there and aren't working, and then perhaps the issue of some dramatic change to the program may, in fact, be necessary. But our work suggests that this is not the time.

Senator LAUTENBERG. Yes. I identified the public works part of it as essentially funding, but it is not only that. It is the whole notion of PRPs. It is private parties getting involved with this. It is the ability to get programs done.

Mr. Martin, would you want to make a quick comment on that?

Mr. MARTIN. Well, Mr. Chairman, from my understanding of what a public works program would be, I don't see how a technical and complicated program like the Superfund often is could be effectively administered in what I would normally think of as a more public works concept.

I think you have, as Mr. Guimond is telling you, a lot of highly dedicated people who are trying very hard to make the program successful in its current structure, and I just don't see that a more loosely operated program in a public works concept would be effective.

Senator LAUTENBERG. You all heard my opening statement and heard my description of the legislation I plan to introduce, and I would ask you whether or not you think that imposing penalties on contractors who falsely certify that they only bill the Government for allowable costs is a good way to go.

Mr. MARTIN. I have already testified, and it has been our longtime position, that that's an excellent addition to the legislative authority that EPA and other Government agencies should have.

Senator LAUTENBERG. Mr. Hembra, do you think that the agency might benefit from the establishment of a chief information person?

Mr. HEMBRA. That was one component of the House bill to elevate it to cabinet status. We testified on that bill, and at that point in time said that we fully supported the idea of the designation of a chief information officer.

Clearly this is an agency that has not developed a clear, comprehensive strategy for building its information management systems. We have a lot of stovepipe individual systems. You have a lot of information that management needs that it is not receiving. There are a lot of questions with the accuracy of the information that is available.

All of that suggests the need for elevation to a senior level in the agency an chief information office.

Senator LAUTENBERG. We are liable to be forerunners in this recommendation, though I'm sure around here that it has been discussed in many quarters. But I also am the chairman of the Transportation Subcommittee of Appropriations, and I have FAA, which is a very complicated communications and information system. It is coordinating the systems, bringing the data together—very, very tough because the pieces are a lot less complicated than the amalgamation or merger of all the data into an effective management tool.

I appreciate your support there.

Do you think that maybe reduced emphasis on these large, umbrella contracts, close documentation of expenses—travel, etc., by contractors—would be effective in terms of controlling the expenditure side of things?

Mr. MARTIN. As I said before, Mr. Chairman, we have taken a position some time ago that the umbrella contracts in EPA are a real problem. They are a problem that I think even, as you heard earlier from Ms. Harper, the efforts the agency is making to reduce gigantic contracts to a more manageable size has a lot of benefits to it, including minority participation and other things that we are really trying to get at.

From what I have heard in your statement before, I think you are right on target with the initiatives that you are trying to start.

Senator LAUTENBERG. You agree, Mr. Hembra?

Mr. HEMBRA. I would certainly agree with Mr. Martin that the initiatives you have laid out in your opening statement with regard to better controlling the umbrella contracts are long overdue, and I think they will go a long way to help managing not only the contracts, but ensuring and getting at some of the issues relating to inherently Governmental functions.

Senator LAUTENBERG. To Ms. Harper, I understand that the administrator and OMB testified on the House side in favor of many of the changes that I have described. Does the administration support these legislative changes?

Ms. HARPER. Yes, Mr. Chairman, they do. We long recognized the inherent danger of our large umbrella contracts. We have already, ourselves, as I have said in my opening remarks, begun a pilot to try and break up some of these to get more competition, more small business involvement, cleaner statements of work.

In addition, Mr. Chairman, we have, on all of our new contracts, a provision requiring certification of their indirect costs of our contractors. What we lack is a penalty. If your legislation were to move that forward, I'm sure the administration would be very supportive of that.

Senator LAUTENBERG. And you have looked at all the recommendations, not simply those having to do with the umbrella contract? Would you say that there is support by the administration for it?

Ms. HARPER. Yes, Mr. Chairman, I would.

Senator LAUTENBERG. Thank you all very much. I'm sorry that we had the delay in the middle, because I'd like to discuss this a little longer. Unfortunately, we are out of time.

What we will do is keep the record open and would ask all of you to respond to any questions submitted as promptly as you can.

Mr. Guimond, you have a couple of things you are going to get back to us with.

With that, this hearing is adjourned. I thank all of you for participating.

[Whereupon, at 12:18 p.m., the committee was adjourned, to reconvene at the call of the Chair.]

[Statements submitted for the record follow:]

STATEMENT OF RICHARD L. HEMBRA, DIRECTOR, ENVIRONMENTAL PROTECTION ISSUES, GENERAL ACCOUNTING OFFICE

Mr. Chairman and Members of the Subcommittee:

We are pleased to be here today to discuss program management costs associated with the Environmental Protection Agency's (EPA) hazardous waste cleanup contracts under Superfund. Critics have raised concerns about Superfund contractors' spending excessive amounts of public funds on activities that do not advance the cleanup of hazardous waste sites. These concerns have focused on high administrative and management costs (program management costs) incurred by EPA's Alternative Remedial Contracting Strategy (ARCS) contractors.

Mr. Chairman, as you are aware, over the years we have reported on numerous contract and fiscal management problems in the Superfund program.[1] This work has repeatedly identified serious deficiencies in EPA's management of contractors and in the agency's efforts to recover costs from responsible parties. With billions of dollars at stake, EPA's effective management of these contracts is critical if we are to maximize scarce federal resources for cleanup activities at these hazardous waste sites. For years, however, the agency tolerated deficiencies in contract management and failed to follow through on planned corrective measures. Recently, under pressure from the Congress and others, EPA has taken steps to remedy these long-standing contract management problems. EPA will need to sustain this effort under the new administration to correct these problems.

Our testimony today focuses on one particular aspect of EPA's contract management—high program management costs on cost-reimbursable ARCS contracts. As a result of the criticisms about EPA's high program management costs, you and two other Subcommittee Chairmen requested that we assess (1) the extent of and reasons for high Superfund program management costs and EPA initiatives to reduce these costs and (2) EPA's plans to control program management costs on future Superfund cleanup contracts. This testimony summarizes the resulting report that we are releasing at this hearing.[2]

In summary, lack of EPA action has contributed to high ARCS program management costs. As of September 1992, ARCS contractors had incurred $465 million in costs, of which one quarter ($105 million) was for program management.[3] The percentage of costs expended for program management ranged from almost 70 percent in fiscal year 1988 to 15 percent in fiscal year 1992. These high costs resulted in part because EPA awarded a large number of contracts and built in excess work load capacity into the contracts to allow EPA to terminate contractors that performed poorly and to prevent future capacity shortages. However, the cleanup work load EPA anticipated never materialized, in part because of changes in EPA policy, including a decision to have private parties responsible for site contamination manage and pay for cleanups. Also, EPA delayed in terminating contractors and effecting other contracting changes to avoid additional costs to the government. Furthermore, ARCS contractors have included costs that either are not allowable or are questionable under the Federal Acquisition Regulation (FAR) in their indirect costs—a portion of which is charged to program management. Subsequent increases in cleanup work load and recent EPA initiatives to control program management costs have eased the work load overcapacity problem to some degree, but the problem persists in some regions, and EPA has yet to adequately study whether further terminations are warranted.

EPA is currently developing new contracts to replace ARCS contracts and is, once again, also considering policy changes that could affect the volume and type of work

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[1] See app. I for a list of our reports pertaining to Superfund contracting.

[2] *Superfund: EPA Action Could Have Minimized Program Management Costs* (GAO/RCED-93-136, June 7, 1993).

[3] Our report and this testimony incorporate EPA program management cost data through fiscal year 1992, the latest data available at the time we conducted our audit.

available to Superfund contractors. EPA staff are aware that these policy changes and Superfund's upcoming reauthorization could affect the cleanup work load. For this reason they are attempting to incorporate enough flexibility into the new contracts to allow for sufficient contract capacity and to minimize future program management costs. EPA's ability to respond to program changes as they occur and, if needed, coordinate prompt and appropriate actions could help minimize future program management costs.

In the report released today, we have made recommendations designed to control program management and other contracting costs.

Before we begin a more detailed discussion of our findings, let me provide you with some background information on EPA's ARCS contracts.

BACKGROUND

The Superfund program was created in 1980 to clean up the nation's most dangerous hazardous waste sites. The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) created a trust fund (Superfund), financed primarily through taxes on crude oil and chemicals, to pay for site cleanups. The Congress reauthorized Superfund in 1986 and in October 1990 increased its authorization to a total of $15.2 billion.

EPA first awarded contracts to private ARCS contractors in 1988 to perform or oversee the cleanup of Superfund hazardous waste sites. These contractors perform remedial studies, design cleanup remedies, and manage the cleanup under ARCS contracts. Actual site cleanups can be performed by other private contractors or by the U.S. Army Corps of Engineers.

Prior to 1988, under EPA's previous contracting strategy, contracts were awarded only to five relatively large contractors. To increase the level of competition and to encourage smaller firms to participate, EPA awarded a total of 45 ARCS contracts to 23 contractors in 1988 and 1989, each for a period of 10 years. The total cost of the 45 contracts, if all options are exercised, is $6.6 billion. This includes $2.4 billion for cleanup design and oversight by the 23 ARCS contractors and $4.2 billion for subcontractors that would perform the actual cleanups.

The work performed under ARCS contracts is divided into two elements—program management and remedial planning. EPA incorporated the program management concept into ARCS contracts as a means of providing oversight for non-site-specific costs. Costs that support multiple sites are also charged to program management. Costs incurred for a specific site are charged to remedial planning. Program management costs include such costs as the salary of contract managers, the cost of reporting and billing, and the cost of purchasing equipment used at multiple sites.

Before turning to program management costs, we'd like to place today's hearing in the broader context of our prior work on problems with fiscal mismanagement of EPA's contracting and cost recovery efforts.

PROBLEMS WITH SUPERFUND CONTRACT MANAGEMENT AND COST RECOVERY EFFORTS

Over the years, we have repeatedly reported that serious contract management problems exist in the Superfund program. As you know, EPA makes extensive use of cost-reimbursable contracts to clean up hazardous waste sites. These contracts require special agency oversight because they reimburse the contractor for all allowable costs and therefore give the contractor little incentive to control costs. However, we have repeatedly reported that EPA has not overseen its cost-reimbursable contracts as necessary to prevent contractors from overcharging the government. For example, EPA has not satisfactorily estimated the cost of work before approving contractors' budgets. In addition, EPA has not effectively used two other basic cost control techniques—invoice reviews and audits—to ensure the reasonableness of contractor charges. For example, we testified in March 1992 that over $2.5 million in unallowable and questionable costs were improperly included in the overhead accounts by one ARCS contractor, including providing clients with tickets to professional sporting events, alcohol at company parties, and nonemployee travel by spouses.[4]

We also previously reported that EPA has recovered only a small fraction of the Superfund resources that it has spent. Parties responsible for contaminating Superfund sites are required by CERCLA to clean them up or to reimburse EPA for a government funded cleanup. As of September 30, 1992, EPA had collected just 10 percent of the $5.7 billion that it had classified as recoverable from responsible par-

[4] *Federally Sponsored Contracts: Unallowable and Questionable Indirect Costs Claimed by CH$_2$M Hill* (GAO/T-RCED-92-37, Mar. 19, 1992).

ties. Because it lacks complete data on its past recovery efforts, EPA cannot explain this low rate of repayment. Among other problems we identified, EPA does not fully recover its indirect costs and interest.

Under mounting pressure from the Congress, EPA's Inspector General, and GAO, EPA began in 1992 to address its contract management and cost-recovery problems, including the root causes. EPA senior management has started to focus attention on contracting and has recently initiated efforts to exercise greater financial control over its Superfund contracts. For example, since early 1992, EPA has required its staff to develop independent government cost estimates for Superfund contracts and is working to help its staff develop cost-estimating expertise. EPA has also requested funding to increase the number of auditors in its Office of Inspector General to help reduce the audit backlog. To improve its cost-recovery efforts, in August 1992, EPA proposed regulations to change its approach for recovering indirect costs. Under this proposal, the agency would seek to recover the previously excluded categories of indirect costs and would revise its method for distributing indirect costs so that almost all indirect costs would be recoverable. EPA is currently reviewing comments on this proposal. If adopted, the agency estimates this proposal would almost triple the indirect costs recoverable from responsible parties, and would allow EPA to seek recovery of some of the over $1 billion now excluded.

With this as background, we'd like to focus the balance of our statement today on another area of contracting—program management. Specifically, we will describe the extent of and reasons for high Superfund program management costs and EPA's initiatives to reduce these costs and its plans to control program management costs on future Super fund cleanup contracts.

LACK OF EPA ACTION CONTRIBUTED TO HIGH ARCS PROGRAM MANAGEMENT COSTS

Lack of EPA action has contributed to excessive program management costs in Superfund's ARCS cleanup contracts. Nearly halfway through the life of these 10-year contracts, contractors have spent $105 million, which represents almost one of every four dollars (23 percent), on program management activities. EPA anticipated that program management costs would represent a higher proportion of contractors' costs in the early years of the contract—because of start-up costs the ARCS contractors were expected to incur—and would then diminish in the latter years of the contracts as the remedial work load increased. Although the yearly percentage of these costs has declined—from 69 percent in fiscal year 1988 to 15 percent in fiscal year 1992—program management costs have been much greater than anticipated, primarily because the expected cleanup work load either never materialized or went to others.

Mr. Chairman, we'd like to highlight a few of the factors that contributed to the high ARCS program management costs. First, in awarding the contracts, EPA deliberately built in excess contract capacity and increased the number of contracts involved from 5 to 45 to avoid future capacity shortages and to allow for the termination of poor performers. Simply put, EPA hired too many contractors for the work they eventually were given to do. Second, the anticipated cleanup work load for ARCS contractors never materialized, in part because of policy changes that EPA did not consider in its original work load estimates. For example, soon after the ARCS contracts were awarded, EPA implemented a new enforcement-first policy that compels parties responsible for site contamination to manage and pay for cleanups. This and other policies effectively reduced the amount of work available for ARCS contractors. Finally, although EPA was aware of high ARCS program management costs as early as October 1989, it did not initiate action to avoid additional costs to the government and to correct the problem, such as terminating contractors as originally planned, until the beginning of fiscal year 1992.

Of the $465 million in ARCS costs, nearly $161 million was for indirect costs—costs that are particularly subject to waste and overcharging. Our December 1991 review of indirect costs claimed by one ARCS contractor and similar reviews of other ARCS contractors by the Defense Contract Audit Agency (DCAA) and EPA's Inspector General found that contractors had claimed costs that are either not allowable or are questionable under the FAR.[5] These past reviews showed that the

[5] See *Federally Sponsored Contracts: Unallowable and Questionable Indirect Costs Claimed by CH_2M Hill* (GAO/T-RCED-92-37, Mar. 19, 1992) and *EPA's Contract Management: Audit Backlogs and Audit Follow-up Problems Undermine EPA's Contract Management* (GAO/TRCED-91-5, Dec. 11, 1990). On Apr. 9, 1992, DCAA testified on ongoing audit issues with 17 of the 35 largest Superfund contractors before the Environment, Energy, and Natural Resources Subcommittee of the House Committee on Government Operations.

primary cause of these charges to the government were inadequate contractor internal controls and the excessive backlog of audits.

Because of these prior findings, our most recent work included a review of a sample of indirect costs that two additional ARCS contractors had included in their overhead claims. We found instances in which unallowable and questionable expenses were being claimed by these contractors. For example, one contractor included about $2,000 for alcoholic beverages in its overhead account, costs that are clearly unallowable under the FAR. Similarly, the other contractor included about $4,400 for tickets to sports events and sports apparel in its overhead costs. Both contractors also included expenses in their indirect costs accounts that we consider questionable. The FAR requires that indirect costs that are allowable must also be reasonable but does not illustrate what a prudent person would consider a reasonable cost. While the FAR allows reasonable expenses designed to improve employee morale, we question one contractor's inclusion of about $70,000 for various entertainment and employee welfare activities, including $23,000 for an alumni dinner and $25,000 for Christmas parties. While the prudent person standard is admittedly a subjective one, we question whether these expenses are reasonable.

EPA has taken a number of actions to improve contract management and to minimize program management costs and wasteful indirect costs, such as strengthening guidance to and oversight of contractors. EPA has also increased the ARCS work load by shifting work from other contracts. These actions have helped reduce the percentage of program management costs to about 15 percent for fiscal year 1992.

Although EPA's actions have lowered the percentage of program management costs, they have not entirely resolved the problem. Significant excess contract capacity remains in some regions that, if left unresolved, may ultimately cost the government millions of dollars in unnecessary program management costs that will otherwise continue to accrue over the life of these contracts. Moreover, nearly one of every five ARCS contracts continues to charge program management costs in excess of 20 percent of total contract costs. In regions that still have excess contract capacity, terminating one or more contracts could save millions of dollars in program management costs over the remaining life of the ARCS contracts.

Let me now shift my attention to EPA's efforts to control program management costs on the new Superfund cleanup contracts.

EPA'S NEW CLEANUP CONTRACTS ARE MORE FLEXIBLE

EPA is currently developing new cleanup contracts, known as Response Action Contracts (RACS), that will supplement and eventually replace the ARCS contracts as their capacity is exhausted. The regions will begin to run out of ARCS capacity in 1994, according to EPA. EPA has prepared work load forecasts to estimate contracting needs, ensure the continuity of cleanup work upon expiration of the ARCS contracts, and help control program management costs.

EPA is designing the new RACS contracts with features to address key deficiencies of the ARCS contracts, especially features to help avoid excess capacity and high program management costs. For example, EPA plans to reduce the overall number of contracts from 45 to between 20 and 30. EPA also plans to reduce the contract duration from 10 years to 5 years, with an option for the government to renew the contract for an additional 5 years. Because the RACS contracts will be procured over the next 4 to 5 years as needed for each region, EPA will also be able to adjust the RACS design as needed for future procurements. Finally, detailed cost breakdowns and a new award fee process should make it easier for EPA to monitor and control costs.

Major policy initiatives now being developed at EPA, such as the Superfund Accelerated Cleanup Model (SACM) to help expedite cleanups, and Superfund's upcoming reauthorization may affect RACS' contracting needs. To avoid the types of problems that have occurred under previous cleanup contracts, EPA will need contracts flexible enough to avoid excessive costs under a variety of possible scenarios. The ultimate usefulness of the flexibility built into RACS contracts depends, however, on EPA's ability to utilize these features wisely and decisively in response to changing contracting needs and to coordinate the development and implementation of SACM.

CONCLUSIONS

In conclusion, as the number of Superfund hazardous waste sites and the corresponding costs to clean them continues to escalate, EPA has the dual responsibility to eliminate the human health and environmental dangers posed by these sites quickly and cost-effectively. With scarce federal resources and competing federal demands, it is important that EPA maximize the use of available funds for hazardous

waste cleanup activities at specific sites. To date, EPA's performance in this area is poor, with a high proportion of Superfund dollars being spent on program management and indirect costs.

Four years after becoming aware of this problem, EPA has taken some actions to reduce program management costs but has failed to adequately address the problem's root cause—too many ARCS contractors and too much ARCS contract capacity. In designing the new RACS cleanup contracts, EPA has included key features that should help control program management costs and maintain appropriate levels of contractor capacity. The ultimate usefulness of the flexibility being built into RACS contracts depends, however, on EPA's ability to effectively coordinate new policy initiatives and program changes and to utilize the flexible features wisely and in a timely manner in response to changing Super fund contracting needs.

As we recommended in the report being released today, there are a number of actions that EPA can take to minimize program management costs. Specifically, we recommended that EPA analyze ARCS contracts to determine whether terminating some contracts would be more cost-effective than continuing to pay program management costs for the remaining life of underutilized contracts. We also recommended that EPA coordinate the development and implementation of SACM and other policy initiatives, as well as major program changes that may occur during Superfund's reauthorization, and modify the RACS contract design as needed to avoid unnecessary government costs once they go into effect.

Mr. Chairman, this concludes my prepared statement. I will be glad to respond to any questions that you or Members of the Subcommittee may have.

APPENDIX I

Related GAO Products on EPA Contracting

Federal Contracting: Cost-effective Contract Management Requires Sustained Commitment (GAO/T-RCED-93-2, Dec. 3, 1992).
Superfund Program Management (GAO/HR-93-10, Dec. 1992).
Superfund: EPA Cost Estimates Are Not Reliable or Timely (GAO/AFMD-92-40, July 1, 1992).
Federally Sponsored Contracts: Unallowable and Questionable Indirect Costs Claimed by CH_2M Hill (GAO/T-RCED-92-37, Mar. 19, 1992).
Superfund: EPA Has Not Corrected Long-Standing Contract Management Problems (GAO/RCED-92-45, Oct. 24, 1991).
Superfund: More Settlement Authority and EPA Controls Could Increase Cost Recovery (GAO/RCED-91-144, July 18, 1991).
EPA's Contract Management: Audit Backlogs and Audit Follow-up Problems Undermine EPA's Contract Management (GAO/T-RCED-91-5, Dec. 11, 1990).
Superfund: Contractors Are Being Too Liberally Indemnified by the Government (GAO/RCED-89-160, Sept. 26, 1989).
Superfund Contracts: EPA's Procedures for Preventing Conflicts of Interest Need Strengthening (GAO/RCED-89-57, Feb. 17, 1989).
Superfund Contracts: EPA Needs to Control Contractor Costs (GAO/RCED-88-182, July 29, 1988).

Testimony of John C. Martin, Inspector General, Environmental Protection Agency

Good morning, Mr. Chairman and members of the subcommittee. The Office of Inspector General has conducted many audits of the Superfund program at EPA, including internal audits of program operations and administrative areas, as well as cost audits of contracts and assistance agreements. This morning I will be discussing recently completed and ongoing audit work in three areas of Superfund: EPA's contract management; financial management; and information management. Although I will use examples relating to the Superfund program, these areas of concern are also problems in other EPA programs and activities.

Over the years EPA has given top priority to achieving its program goals and carrying out its environmental mission. But in pursuing its environmental goals, EPA has not given sufficient priority to the administrative and management activities that I will focus on today. The secondary consideration given to these areas has resulted in their becoming significant problems that will take time to correct.

Recently, EPA has made major efforts to bring about a change in the culture which allowed various kinds of mismanagement to occur. But unfortunately our

audits continue to find weaknesses in current activities at EPA, and this shows me that the battle for good management of the Agency's resources is far from over.

CONTRACT MANAGEMENT

EPA relies extensively on outside entities to assist in carrying out its mission to clean up past pollution problems, developing national policy, and setting the environmental agenda for the future. As of September 30, 1992, EPA had approximately 637 active contracts worth about $3 billion.

Administrator Browner appeared before another Congressional Committee recently and said that much remains to be done to improve EPA's management of its extramural resources, and I fully agree with her assessment. In a series of recent reviews focusing on EPA's contract management, we pointed out that senior EPA managers' indifferent attitude toward contract management and the attitude that contractor employees are part of the "EPA family" can increase the Agency's vulnerability to fraud, waste and abuse. This has resulted in lessened EPA control over critical program activities, the creation of personal services relationships between the contractor and EPA, the contractor's performance of inherently governmental functions, potential conflict-of-interest situations, and inefficient use of Agency resources. Other problems continue to occur, such as authorizing work to begin without a work assignment and asking the contractor to perform work outside the scope of the contract. In recognition of the seriousness of overall vulnerabilities in contract management at EPA, it was identified as a material weakness in its fiscal 1992 Federal Managers' Financial Integrity Act (FMFIA) report to the President.

In response, the Agency established a standing Committee on Contract Management to improve controls over its operations and contract management on an agency-wide basis, including the Super fund program. The Committee identified 40 areas for improvement. An action plan with milestone dates was prepared to ensure implementation of the Committees recommendations. Ten of the recommendations have been completed and the others should be completed over the next year.

Contract management has also been specifically recognized as an area of concern in the Superfund program, and has been the subject of a number of task forces. These include groups evaluating cost estimating for Superfund contracts, administration of emergency cleanup contracts, and documentation requirements for cost recovery purposes. One such task force was formed to evaluate how well the Alternative Remedial Contracting Strategy was working. Under ARCS each Superfund site becomes the responsibility of a single contractor. The ARCS concept was implemented to accelerate Superfund cleanups; however, it was criticized for spending an inordinate amount of funds on administrative activities rather than direct cleanup of sites. The ARCS Task Force addressed this problem and issued a report containing 32 recommendations for corrective actions. Most of these recommendations have been implemented. We believe they have improved the ARCS program. For example the goal of limiting program management expenditures to 15 percent has been achieved and EPA has begun to do independent Government cost estimates for work assignments over $25,000.

SUPERFUND CONTRACTS

EPA has always relied on an extensive network of contractors to help carry out the Superfund program. Most Superfund work is performed under cost-reimbursement contracts because there are a lot of unknowns involved in cleaning up hazardous waste sites. The relationship EPA has with its contractors depends on the type of work or services the contractor provides. In Superfund administrative support contracts, we noted working relationships between EPA and contractor employees were so close that they resulted in the contractor performing personal services for EPA staff. There were also indications that contractors were performing inherently governmental work. On the other hand, the contractors which identified and monitored responsible party cleanups worked too independently. Our review of contract management for these contracts showed that EPA's lax oversight and poor planning led to delays and inefficiencies.

Administrative Support Contracts

EPA uses administrative support contractors to carry out activities such as developing data bases, performing statistical analyses, and arranging training conferences. In March 1993, we issued a report on the Agency's management of Superfund support contracts. In this audit we noted improvements in certain areas of contract management. For instance, we found no instances where work was being performed outside the contract scope. We attribute these improvements to EPA's increased em-

phasis on correcting contract management deficiencies. However, our audits found two problem areas persisted: personal services and poor documentation of contractor assignments.

Personal Services

The Agency administered the six Superfund support contracts in our sample in a manner which exhibited many of the indicators of a personal services contract. Personal services contracts are those characterized by the development of an employer-employee relationship between EPA and contractor staff. With a shortage of in-house staff, EPA tended to step over the line and used support contractor employees to assist in carrying out its day-to-day activities. Personal service contracts violate civil service laws which require the Government to obtain employees by direct hire.

In administering support services contracts, EPA should provide work assignments that give enough information about the specific work to be accomplished so that the contractor can carry out the task. Communication between EPA and the contractor should be between an EPA project officer and an employee designated by the contractor as a contract point. However, in four of the 17 assignments we reviewed under six different contracts, EPA staff were providing continuous direct supervision of contractor employees. This is wrong: in effect, EPA is augmenting its existing staff with contractor employees.

When a contractor submits a proposal for providing Government services, it must be qualified to perform the work contemplated under the contract. It is appropriate for EPA to provide limited technical guidance to the contractor's designated contact point, but it should not be providing detailed instructions to other contractor employees. However, in half of the support contracts we reviewed, EPA employees provided contractor employees guidance on specific details of work assignments.

The activities performed by the contractor included those also performed by EPA employees, including drafting invitation letters to meetings, making logistical arrangements, directing public inquires to the appropriate EPA office and checking the EPA project officer's voice mail for messages.

We concluded that the almost continuous supervision of contractor employees and the nature of the work they provided are strong indicators that the Agency administered these contracts as personal services contracts. While we can understand EPA's sense of urgency in getting its mission accomplished, lax contract management leads to situations when contractor employees are treated as part of the "EPA family," and arms length administration of contracts becomes impossible. This does not serve the public's interest.

Documentation Needed To Support Technical Direction

We found EPA Work Assignment Managers were not adequately documenting technical direction they provided to the contractors. This occurred primarily because the contracts were continuous in nature, and EPA managers said they did not have the time to document all guidance provided contractors.

Agency policy requires a clear trail of documentation to show that EPA personnel reviewed the contractor's work and that Agency personnel, not contractors, made the final decisions. Clear and adequate documentation serves as a safeguard against contractor bias and that contractors were not performing inherently governmental functions. Our audit of Superfund support contractors, however, found instances where contractors performed activities that EPA considers areas of potential vulnerability because they may be inherently governmental. For example, contractors performed support services including analyses and feasibility studies to be used by EPA personnel in developing policy, regulation development support, and conducting training courses.

Technical Enforcement Support Contracts

In another report issued in March 1993, we found EPA had not adequately managed its Technical Enforcement Support (TES) contractors. These contractors are used both to identify companies and individual Is who may have contributed to a hazardous waste site, and later to monitor the cleanups performed by these responsible parties. This report consolidated the results of 15 audits of responsible party cleanups from 1988 to 1991. In putting together this capping report we took particular care to give the Agency credit for corrective actions already taken. After assessing these actions, we recommended additional steps to address those matters which had not been fully resolved.

In contrast to the administrative support contractors, the Technical Enforcement Support Contractors were given too much free rein without sufficient safeguards to

assure appropriate performance. In addition, EPA did not plan the work effectively because it did not adequately consider the complexities of the assignments the contractors were given. Laxity in overseeing contractors and poor planning led to inefficiencies, delays, and additional expenditures.

Early identification of potentially responsible parties who may be liable for the costs of cleaning up Superfund sites is important to EPA's "enforcement first" policy. It allows EPA to negotiate with the responsible parties for the costs of the subsequent cleanup. The TES contractors often did not complete responsible party searches within the periods of performance. In the two regions we audited time extensions to work assignments were required in over half of the sites we looked at. Some of the searches for potentially responsible parties took more than 3 years longer than expected. In one region, the costs of searches for potentially responsible parties increased from 19 to 153 percent. In the other region, cost increases ranged from 90 to 312 percent. The causes of these increases were poor estimates of the work needed, and the contractor's use of personnel who had no expertise in conducting searches for potentially responsible parties.

We also reported weaknesses in EPA's management of TES contractors in the cleanup oversight phase of their work. None of the four regions we reviewed conducted adequate quality assurance reviews of the contractors. In three of the four regions EPA project managers rarely made site visits to evaluate how well the TES contractors were overseeing cleanup work.

Conducting regularly scheduled site visits ensures that contractors are performing their duties properly. In one region there was complaint that the TES contractor's representative was conducting all oversight activity of the site cleanup from a car parked some 150 feet from the boundary of the established exclusion zone. More frequent project manager visits might have alerted the region sooner to this situation.

FINANCIAL MANAGEMENT

The next area of concern I would like to discuss is financial management in the Superfund program. EPA needs a financial accounting system that provides complete, consistent, reliable and timely data for decision making and control of assets. While the Agency has devoted considerable time and effort to improving the Agency's overall performance in this area, it continues to lack basic internal controls to ensure the availability of reliable information. For over 10 years we have repeatedly reported on problems with EPA's financial accounting system.

We view the Chief Financial Officers Act as a new opportunity to recognize and correct financial management problems. EPA's delegations of authority were revised to provide EPA's Chief Financial Officer with some oversight over employees in regional finance and Headquarter program offices. We believe this is an important step because EPA's decentralized organizational structure has defeated attempts in the past to hold regional finance offices and program offices accountable for their performance. The basic, pervasive, and persistent nature of the findings in our audit reports over the last decade indicate that sound financial management was secondary to what Agency managers viewed as their environmental protection mission.

Financial integrity and overall good management are especially critical for Superfund. The Superfund trust fund is replenished when EPA is reimbursed for cleanup costs from responsible parties. Cost recovery is critical to a viable Superfund program because the trust fund alone is not sufficient to clean up every hazardous waste site. With the assistance of the Department of Justice, the Agency pursues cost recovery against responsible parties. During this process the Agency's documents and decisions are under great scrutiny and must be above reproach. Accurate accounting records that identify the costs incurred for the cleanup, are essential to support the cost recovery effort.

Indirect Cost Rate

EPA's conservative policy of excluding certain costs from its indirect cost pools resulted in a materially understated indirect cost rate. Over the years, this policy has excluded over $1 billion in indirect costs.

EPA's review of its Superfund indirect cost rate methodology started in 1987. EPA contracted with an accounting firm to do a study of the methodology being used. The resulting report, issued in April 1988, identified additional costs which the firm recommended for inclusion in the cost pools and included an endorsement of the "full accounting" concept.

The audit report we issued in February 1993, reported that allocable indirect costs were still being excluded from the indirect cost pools. These costs included costs

such as research and development costs, and depreciation expenses. If these costs had been included and properly allocated as part of total cleanup costs, the average fiscal 1988 indirect cost rate would have been $353 per hour instead of the Agency proposed $66 per hour. In total dollars, this resulted in the exclusion of $225.9 million in fiscal 1988 that could have been recovered from responsible parties.

EPA is using the rulemaking process as a means to implement the "full accounting" concept. The revised indirect cost rates under the proposed rule are up to six times higher than the present indirect cost rates and would be applied retroactively for fiscal years 1983 through 1988.

We fully support Agency efforts to make every reasonable attempt to recover all direct and indirect costs that can be attributed to cleanups of specific hazardous waste sites. By publishing the proposed rule, EPA has begun corrective action to revise the methodology for calculating indirect cost rates to include the types of costs excluded under the present method.

Site Accounting

Another area where Superfund costs are not being recovered concerns the so-called "ZZ" accounts. These accounts were set up to accumulate pre-remedial cleanup costs for Superfund sites that do not yet have site identification numbers. Site identification numbers allow for direct charging of costs to a specific site cleanup operation.

In fiscal 1992, the cumulative amount in the "ZZ" accounts exceeded $66 million and accounted for about five percent of total Superfund expenditures. Our audit found that more than half of the $4 million costs included in our sample were improperly recorded. These costs should have been recorded or transferred as direct charges to sites that had identifier numbers, or included as part of the indirect cost allocations.

Accounts Receivable

One important function of the financial management system is to record and manage accounts receivable to ensure that the Agency collects all the funds to which it is entitled. While the Agency has reported it has recovered over $545 million since the inception of Superfund, we found that this figure could have been greater if EPA pursued cost recoveries more aggressively. For example, an Agency report dated October 1992 stated that EPA recovered $21.2 million out of a total $44.7 million incurred for 979 removal sites each with costs less than $200,000 each.

Although we have not done audit work to evaluate these actions, we did look at recoveries in this category in 1990. We found that if EPA actively pursued sites with incurred costs of less than $200,000, it could have recovered an additional $74 million.

Another area that we are concerned about is cost recoveries for sites which may be impacted by the statute of limitations. In a recent memorandum from EPA responding to an audit report, EPA states: "At the end of FY92 there were approximately 2070 sites, with average direct obligations of $1.7 million, eligible for cost recovery." This memo goes on to state that the situation will get worse in the future because of the increase in the number of high cost remedial actions that will require recovery over the next several years. We share the Agency's concern in this area because these costs may be lost forever if EPA does not take aggressive cost recovery actions before expiration of the time limitation.

Once EPA establishes a debt for cleanup costs to be paid by a responsible party, it must be recorded in the financial management system. This function becomes even more critical in a time of financial constraint that we are now experiencing. At the beginning of this fiscal year, EPA had total receivables of over $237.5 million. We have repeatedly found that EPA has not posted receivables in a timely manner, and has reported instances where collections from debtors were received *before* the receivables were recorded in EPA's accounting system.

In the Superfund program alone, over $128 million is due EPA from outside parties. In a recent summary of our audits of the Superfund Trust Fund, we reported that from 1983 to 1990, $94 million of accounts receivable were not posted in a timely manner. The Agency is working to correct deficiencies in accounts receivable, but the most recently issued audit of the Trust Fund still found that $15 million of accounts receivable out of a $30 million sample took an average of seven calendar weeks from the time the amount owed EPA was finalized before it appeared in EPA's financial management system as an account receivable. Further, an audit on EPA's processing of response claims in Region 6 found the region did not collect or even attempt to collect about $1 million for work performed by EPA and its contractors.

In an effort to address the continuing problems in managing accounts receivable, EPA established a task force to identify problems and recommend solutions. Problem areas noted by the task force included Servicing Finance Offices not receiving enforcement actions timely; more aggressive action needed to collect receivables; and improvements needed in internal controls. Actions taken to address these areas included establishing inter-office procedures to improve tracking, exploring ways to strengthen the collection process, and identifying procedural deficiencies. EPA has also initiated reconciliation procedures in an attempt to ensure that all valid accounts receivable are recorded.

INFORMATION MANAGEMENT—DATA INTEGRITY

I would now like to discuss EPA's Information Resources Management program. EPA has over 500 computerized information systems providing data on a wide range of environmental programs. In performing 15 internal audits of these systems over the last 4 years, we have reported serious deficiencies—both in the overall management of the information resources program and with individual information systems and computer centers.

EPA does not have a comprehensive quality assurance program to ensure the reliability of its information systems. As a result, many EPA offices have developed their own systems which they consider more trustworthy—a wasteful duplication. We found at least six systems which contain data on the ADP inventory, four which accumulate budgetary data, and twenty which track financial information.

Many of EPA's directives and standards for information resources management are incomplete and outdated. They often do not distinguish between mandatory policies and optional guidance.

The costs of developing EPA's Integrated Financial Management System have more than tripled from $7.7 million to a reported $27 million. The lack of good system development standards was a major reason for this increase.

Information resources management has been pushed into the background. EPA has viewed this area as secondary to the Agency's environmental mission, and not given it the attention it deserves.

CERCLIS

Managing information is key to a successful operation. This is especially true in the Superfund program. To help manage the voluminous site, program and project management information, EPA developed the CERCLA Information System (CERCLIS). CERCLIS contains data on planned and actual program accomplishments, and is a primary basis for strategic Superfund decision-making. Regional personnel enter data into CERCLIS, and any user can generate reports from the system. Like any information system, CERCLIS is only as good as the quality of the data it contains.

My office has reviewed different aspects of CERCLIS over the last 4 years. In 1990, we reported that CERCLIS reports contained material errors due to inadequate controls over documentation, software changes and testing. We also reported that EPA's post-implementation review of CERCLIS was deficient because of insufficient testing.

In 1992, we followed up on these two reports and found that EPA had made some improvements in response to our 1990 recommendations. For example, EPA improved its report generation process, corrected erroneous reports, and improved controls over report programs.

However, EPA had only partially implemented, or not implemented at all, half our 1990 recommendations, allowing certain problems to continue, especially data quality problems. Our 1992 review also identified almost $1.4 billion of financial data errors, as well as missing outlay data and audit trail information. Inaccurate reporting causes users to lose confidence in the reliability of CERCLIS as basis for decision-making. EPA officials generally agreed with our recommendations and promised suitable corrective actions. They had already begun some of these actions when we completed our review.

Superfund Progress Report

Our annual reviews of EPA's Superfund Progress Reports to Congress have identified weaknesses and inaccuracies. Regions have interpreted data definitions differently, leading to inconsistent data entry and inaccurate national totals. EPA has not had adequate quality controls to prevent or detect data errors. We often have found regions claiming Superfund accomplishments they could not support. During our review of the 1991 report data, we received a complaint that one region improp-

erly claimed large numbers of site inspections and preliminary assessments as reportable accomplishments. When we examined the data reported on inspections and assessments for this region, we found that this category was significantly overstated. Upon learning this, the Agency removed this misreported data from the report. We also checked this category of data in other regions as well, but found no deficiencies of this type. The Agency has not yet issued this report of 1991 activities in a final form.

CONCLUSION

Sound contract management, financial integrity, and effective information resources management are critical to fulfill the goals of the Superfund program and to safeguard the taxpayer's dollar. The Office of Inspector General is committed to helping EPA become a model for financial integrity and accountable management, and we will continue working with Agency management to achieve this goal.

This concludes my prepared statement. I will be pleased to answer any questions you may have.

STATEMENT OF SALLYANNE HARPER, ACTING ASSISTANT ADMINISTRATOR FOR ADMINISTRATION AND RESOURCES MANAGEMENT AND RICHARD G. GUIMOND ACTING ASSISTANT ADMINISTRATOR FOR SOLID WASTE AND EMERGENCY RESPONSE ENVIRONMENTAL PROTECTION AGENCY

Mr. Chairman, we appreciate your invitation to appear before the Committee today to discuss both Superfund and Agency-wide contracts and financial management issues at the Environmental Protection Agency. We welcome this opportunity to update you on a number of our plans and improvement initiatives.

Over the last several years, contracts management has received a great deal of scrutiny before various Congressional committees and subcommittees. The nature of the disclosures resulting from this scrutiny identified problems in the contracts management arena, not only in the EPA but also throughout the Federal Government. We can assure you that contracts management is of critical concern to the EPA.

On March 10, 1993, Administrator Browner spoke on this issue before Congressman Dingell and the members of the Subcommittee on Oversight and Investigations of the House Committee on Energy and Commerce. She noted that reports of the Agency's problems in handling contracts were reflective of underlying problems in the Agency culture. During the course of the hearing, the Administrator outlined her initiatives for getting to the root cause of these problems. We would like to describe our approach to these problems and the initiatives the Administrator has designed to address them.

Last spring, EPA established the Standing Committee on Contracts Management and directed it to perform an in-depth analysis of the Agency's contracts management. The Committee's report was significant not only because of the deficiencies it reported, but also because it discussed, for the first time, an EPA cultural philosophy of "mission over management." It is the Administrator's intent to change this cultural philosophy. Implementing the many valuable recommendations made by the Committee will not have a meaningful impact on improving contracts management unless we change the underlying culture.

The Administrator's initiatives are centered on three principles—accountability, good management, and discipline. The key points of accountability are the Administrator's senior management team. Accountability will be further enhanced through the establishment of a high level council of the Agency's managers. This council is responsible for not only integrating management with mission but also for integrating the use of all of EPA's various resource management tools.

The Administrator has established a pilot program to diminish the Agency's present reliance on a small group of contractors. This program involves breaking up some of EPA's umbrella contracts, which are large, mission-oriented, level-of-effort type contracts with broad and varied statements of work. Their use has resulted in vulnerabilities such as performance of work outside the scope of the contract, "contract shopping," and improperly directing the subcontractors of the prime contractor. The smaller replacement contracts will have better defined statements of work, be more competitively priced, and provide opportunities for more businesses, including small businesses, to contract with the Agency.

To assess the Agency's management of its resources, the Administrator has initiated a base review for Fiscal Year 1994. This review will provide information on how resource allocation decisions are made and what resource constraints encumber

us in executing our mission. It will enable the Agency to determine if current resources can be redirected to help solve some of the contracts management problems we are discussing today.

The Administrator has also emphasized the need to establish a disciplinary system which conveys to EPA managers and staff the consequences resulting from resource management violations. This system will be communicated to every employee so that EPA staff and its managers understand they will be held accountable for their actions and any contract-related malfeasance.

We would now like to tell you of some specific accomplishments and major strides EPA has taken in the past year, highlight for you some ongoing initiatives, and let you know where we feel we still need improvements. Although we want to share with you some Agency-wide progress, we will also be focusing on Superfund-related contracting issues.

ACCOMPLISHMENTS

Background—Alternative Remedial Contracting strategy

The Alternative Remedial Contracting Strategy (ARCS) was designed in the mid-1980's to provide a second generation of Superfund contracts to undertake remedial planning activities at hazardous waste sites on the National Priorities List. Previously, these services had been provided by a small number of national and multi-regional zone contracts. Key features of the new strategy included increasing competition through the award of a greater number of smaller regionally-based contracts, promoting project continuity by use of the same contractor in undertaking various phases of remedial activities at a given sited establishing enhanced performance incentives to promote superior contractor performance, and, most importantly, decentralizing contract management to EPA's regional offices. In all, from January, 1988 through September, 1989, 45 ARCS contracts were awarded to 23 individual prime contractors.

ARCS Task Force Report

Early in 1991, the Agency was criticized for its management of the ARCS contracts. Specifically, EPA was accused of allowing Superfund contractors to spend public funds on activities that did not directly contribute to the cleanup of hazardous waste sites. In response to these allegations, the previous Administrator established a Task Force of senior Agency officials to review and analyze the ARCS program.

The ARCS Task Force Report, issued in October, 1991, contained 30 OSWER (or Superfund) recommendations in six functional areas which included program management activities, contract capacity and utilization, contract controls, financial audits and reviews, the award fee and performance evaluation process, and Agency management processes and organization. Currently, 29 of the 30 OSWER recommendations made by the Task Force have been implemented.

One of the most critical recommendations addressed the need to achieve cost reductions and strengthen cost controls through the development of guidance to support cost management activities, particularly in the area of program management. The guidance was promulgated in February, 1993.

Another major recommendation concerned the need to develop a regional capacity for independent government cost estimates for activities under the ARCS contracts. An assessment of existing cost estimating tools was performed and specific guidance provided in August, 1992.

A third significant recommendation concerned the establishment of the ARCS Council and a nationwide network of regional contract management teams charged with oversight of the continuous improvement of contracts management. Such a council was formed, and through its stewardship many of our improvements to the Superfund contracting process are in place.

Reduction in ARCS Contract Capacity

Originally, ARCS capacity was based on Superfund workload projections developed in the 1986–87 time frame. These projections were subsequently increased to ensure flexibility and to promote competition among contractors for new work. Following award, it became apparent that the actual workload was not as high as expected. As noted by the General Accounting Office, this drop in ARCS workload was the result of policy shifts within the Agency, including an increased emphasis on enforcement, and a decision to continue our relationship with the US Army Corps of Engineers in the area of remedial design and construction.

ARCS contract capacity was explicitly addressed in the Agency's Task Force Report of 1991. The Task Force concluded that the appropriate contract capacity was available in seven of ten EPA Regions, while noting that Region IV had already targeted two contracts for termination. Region IV has since balanced its workload and contract capacity. The Task Force further recommended that contract capacity and utilization be reviewed annually, and that a special review of Regions IX and X be conducted. Regions IX and X completed this capacity analysis in March, 1992, asserting that 87 percent to 98 percent of the Regions' available capacity would be used over the ten year period of performance of the contracts.

The Task Force finding—that excessive national contract capacity did not appear to be available—has since been substantiated by the need for new contracts (RACS) in four Regions before 1996, 3 years ahead of the scheduled expiration of the ARCS contracts.

The most recent national capacity review, conducted during the latter part of 1992, continued to show acceptable utilization in most Regions. Regions IX and X continued to have the largest available capacity, while actual utilization rates in Regions IV and V were lower than expected. The Agency will continue annual reviews of contract capacity and utilization across the Regions and make adjustments as necessary.

Program Management

ARCS Program Management (PM) was established to capture and track costs that cannot be attributed to a particular site. PM cost categories are typical of those incurred under all contracts and include both technical cleanup costs such as equipment purchases, technical guidance development, and pollution liability insurance premiums; and administrative support costs for managing the overall contract such as progress reporting and financial management.

PM costs are tracked by comparing them against total contract expenditures. PM costs were high initially (averaging 54-over the first 2 years of operations) reflecting the initial mobilization costs and the lower than expected utilization. However, significant progress has been achieved in reducing PM costs as reflected by an average of 18 percent over the past 3 years. Further, the Agency achieved the 15 percent target mandated by Congress for Fiscal 1992 (the actual rate was 14 percent), and we are working towards the 12 percent target established for Fiscal 1993 (the first quarter actual was 12.3 percent, and the second quarter actual was 12.1 percent).

Agency Contracts Management Accomplishments

EPA's Standing Committee on Contracts Management has implemented many quality initiatives to improve contracts management Agency-wide. First of all, we now inform individuals before they become EPA employees that certain positions may require contracts management oversight by specifying those duties in each vacancy announcement. Contracts management responsibilities are further detailed in each contract manager's position description. Finally, all contract managers are now evaluated on how well they perform these specified contract management related duties.

Accomplishments in the area of contracts management education is taking many forms. In addition to a comprehensive, ongoing initiative to overhaul our training program, the Agency has issued a draft "how to" guide on developing independent government cost estimates and has required its usage for all contract work orders over $25,000. In addition, to make guidance more accessible, we recently compiled an index of all contracts management documents EPA has issued and will keep an updated copy of this index in each Agency library.

Because of the efforts of the Standing Committee, the Agency has also taken critical steps to reduce contract management vulnerabilities before award of certain contracts. The Agency now requires that each contract manager prepare a contract management plan to discuss potentially vulnerable areas and how they will be minimized before a contract is awarded. The Agency is also formalizing the acquisition planning process so that programs can simultaneously chart their contracting1 resource, and training needs.

Additionally, we are looking at ways to strengthen internal controls. As an example, the Agency has issued a checklist of contract-related questions to guide program offices during their annual Federal Managers' Financial Integrity Act (FMFIA) reviews. This will help them better determine if their offices are vulnerable to waste, fraud, and abuse.

It is worth noting that, at the Administrator's direction, we are expanding the role of the Standing Committee on Contracts Management to focus on all extramural resources management. The group is now known as the Resources Management

Committee and its membership will include all senior managers who are responsible for extramural resources oversight.

Contract Administration and Allowable Cost Initiatives

A year ago, EPA was a key participant in a review of civilian agency contracting practices conducted by the Office of Management and Budget, known as the OMB Swat Team. The OMB Swat Team Final Report contains several recommendations to improve EPA's internal contract administration practices, which EPA is working to implement. EPA made a number of other significant recommendations which were also included in the OMB Final Report. In particular, EPA recommended major-changes to Federal cost principles, making it clear that costs incurred for items such as parties, business meals, and gifts are unallowable on all Government contracts. EPA also recommended that contractors be required to certify that their indirect cost claims do not include any unallowable costs and that there be penalties charged to contractors that claim costs that are not allowable. New EPA contractors are required to certify as to the allowability of their costs, but we do not yet have the authority to impose penalties.

Financial Management

In the financial management area, there are two major accomplishments we would like to discuss. One, EPA issued its first set of financial statements under the Chief Financial Officers (CFOs) Act. These statements, which cover all trust funds (including Superfund) for FY 1992, are the first in what EPA hopes will be a series of financial management improvements mandated by the CFOs Act. The statements provide both financial and programmatic information. As indicated by the Inspector General in his soon-to-be-completed audit, improvements in the financial statements themselves and financial management are needed. Nonetheless, EPA considers this first year's financial statements an accomplishment especially given that this was a major new requirement for the Agency.

Second, EPA has successfully developed tools which provide major support for the Superfund cost recovery program. One example is EPA's image processing system which enables us to assemble a document package in hours, a process which used to take weeks. These packages are critical for cost recovery litigation conducted by EPA and the Department of Justice. EPA has also improved financial reporting for Superfund cost recovery, resulting in complete reports, both at a detailed and summary level, of all costs incurred in connection with Superfund site response. And, EPA has improved its accounting policies to increase the amounts available for recovery of response costs from responsible parties.

ON-GOING INITIATIVES

Response Action Contracts

EPA has developed a Superfund Long-term Contracting Strategy which is restructuring all new Superfund contracts over the next decade according to function, rather than by program area as in the past. This strategy will have all new field contracts managed by the Regional offices, rather than centrally managed by Headquarters, thereby improving the efficiency and direct management of the contractors.

As part of this new strategy, the Response Action Contracts (RACs) will be EPA's next generation of Superfund cleanup contracts. These contracts will be procured as the Regions deplete the capacity of their existing ARCS contracts. The RACs contain enhancements which address issues previously raised with the ARCS in the areas of program management and the payment of award fee.

The Agency has structured the Program Support (management) component of the RACs to include among other costs: mobilization, contract integrity, information control and reporting, ongoing technical support services; and contract closeout. The Regions will periodically issue and negotiate work assignments for these activities. Mobilization and contract closeout are one-time costs; other Program Support activities will be ongoing over the period of the contract. This approach provides the Regions the flexibility to monitor and control the Program Support costs associated with the Response Action Contracts and complies with the Agency's goal to minimize these costs.

Another enhancement in RACs is in the payment of award fees. Unlike ARCS, the payment of an award fee will not be made for expected, or satisfactory performance. To encourage sustained quality performance, only performance at the exceed expectations and outstanding levels will receive award fees.

Agency Contracts Management Initiatives

In keeping with EPA's concerns about improved contracts management accountability across the board, the Standing Committee on Contracts Management has developed several recommendations to make immediate improvements to the procurement process. For example, a "cookbook" to assist program officials in the procurement process is well underway and should be distributed Agency-wide by mid-August.

A pilot is also progressing to co-locate contracting officers within a Superfund program office to see if this will simplify the contracts management process. The pilot will last 3 years, at which time a decision will be made as to the feasibility of its expansion to other programs.

There is also a pilot studying the effectiveness of quality contracting teams. These teams consist of both procuring and administrative contracting officers, the project officer and his/her manager, legal counsel, a cost analyst, and a property administrator, if warranted, to accomplish life cycle management of contracts from the pre-award phase to contract closeout.

A third pilot will examine the use of a hybrid type contract allowing the competition of both firm-fixed price and cost-type work orders among a pool of qualified vendors. This pilot is designed to enhance contractor competition, thereby ensuring competitive prices and reducing Agency reliance on cost-type contracting.

Financial Management Initiatives

In the financial management area, as we stated1 a major focus for us is the CFOs Act. We also referred to the Administrator's commitment to establishing a structure of management accountability. Using authorities under the CFOs Act, EPA is building accountability into financial management. By this, we mean that all Agency officials will be held accountable for financial management activities which occur under their organizations. EPA will achieve this by developing financial management performance measures for all Agency offices.

Improvements Needed

Clearly, there are many areas where improvements are still needed. EPA is continually examining, refining, and reassessing its approach to Superfund contracting. EPA is still implementing a large number of the Standing Committee initiatives across the Agency, and it is still too early to validate the results. Audit reports continue to cite contracts management and extramural resource management problems in all parts of the Agency. In the financial management area, EPA is still working to improve some longstanding problems with accounts receivable, property accountability, and its financial management system.

And, of course, EPA needs to continue its efforts to change the Agency culture. Perhaps this is the greatest challenge. We must continue to build and develop a culture so that the concepts of management and mission become synonymous.

CONCLUSION

Mr. Chairman, if you were to ask us whether EPA is any better now than it was a year ago, we would have to answer with a qualified yes. There have been pockets of improvement. There is a greater sensitivity to, and awareness of, contracts management and related issues across the Agency. With greater frequency, people are thinking about management and mission, not just mission:

We will continue our efforts until we are successful in instilling an Agency culture which supports both the letter and spirit of sound resources management. Our success in doing so will enable us to safeguard our environmental programs and uphold the public trust.

Thank you for giving us this opportunity to meet with you; we will be happy to answer any questions you may have.

United States General Accounting Office
GAO
Report to Congressional Requesters

June 1993

SUPERFUND

EPA Action Could Have Minimized Program Management Costs

GAO/RCED-93-136

Executive Summary

Purpose

Critics have raised concerns about Superfund contractors' spending excessive amounts of public funds on activities that do not advance the cleanup of hazardous waste sites. These concerns have focused on the Alternative Remedial Contracting Strategy (ARCS) contractors' incurring high administrative and management costs.

As a result of these criticisms, several Subcommittee Chairmen requested that GAO assess (1) the extent of and reasons for high Superfund program management costs and the Environmental Protection Agency's (EPA) initiatives to reduce these costs and (2) EPA's plans to control program management costs for the new Superfund cleanup contracts.

Background

The Superfund program was created in 1980 to clean up the nation's most dangerous hazardous waste sites. The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 created a trust fund (Superfund), financed primarily through taxes on crude oil and chemicals, to pay for site cleanups. The Congress reauthorized Superfund in 1986, and in October 1990 increased its authorization to a total of $15.2 billion.

EPA uses private ARCS contractors extensively to perform or oversee the cleanup of Superfund hazardous waste sites. These contractors perform remedial studies, design cleanup remedies, and manage the cleanup under ARCS contracts. Actual site cleanups can be performed by other private contractors or by the U.S. Army Corps of Engineers.

Under EPA's previous contracting strategy, contracts were awarded only to five relatively large contractors. To increase the level of competition and to encourage smaller firms to participate, in 1988 and 1989 EPA awarded a total of 45 ARCS contracts to 23 contractors, each for a period of 10 years. The total cost of the 45 contracts, if all options are exercised, is $6.6 billion. This includes $2.4 billion for ARCS contractors' cleanup design and oversight and $4.2 billion for subcontractors' actual cleanups.

The work performed under ARCS contracts is divided into two elements—program management and remedial planning. EPA incorporated the program management concept into ARCS contracts as a means of providing oversight for non-site-specific costs. Costs that support multiple sites are also charged to program management. Costs incurred for a specific site are charged to remedial planning. Program management costs include, among other things, the salary of contract managers, the cost of

reporting and billing, and the cost of purchasing equipment used at multiple sites.

Results in Brief

Lack of EPA action has contributed to high ARCS program management costs. As of September 1992, ARCS contractors had incurred $465 million in costs, of which one quarter ($105 million) was for program management. The percentage of costs expended for program management ranged from almost 70 percent in fiscal year 1988 to 15 percent in fiscal year 1992. These high costs resulted in part because EPA awarded a large number of contracts and built in excess contract work load capacity to allow EPA to terminate contractors that performed poorly and to prevent future capacity shortages. However, the cleanup work load EPA anticipated never materialized, in part because of changes in EPA policy, including a decision to have private parties responsible for site contamination manage and pay for cleanups. Also, EPA delayed before terminating one contractor in October 1991 and effecting other contracting changes to avoid additional costs to the government. Subsequent increases in cleanup work load and recent EPA initiatives to control program management costs have eased work load overcapacity to some degree, but the problem persists in some regions, and EPA has yet to determine whether further terminations are warranted.

EPA is currently developing new contracts to replace ARCS contracts as they expire and is, once again, also considering policy changes that could affect the volume and type of work available to Superfund contractors. EPA staff are aware that these policy changes and Superfund's upcoming reauthorization could affect the cleanup work load and thus are attempting to incorporate enough flexibility into the new contracts to allow for sufficient contract capacity and to minimize future program management costs. EPA's ability to respond to program changes as they occur, and, if needed, coordinate prompt and appropriate actions, could help minimize future program management costs.

Principal Findings

High Program Management Costs

ARCS program management costs have far exceeded EPA's projections. EPA expected that, with the full use of the contracts, program management costs would constitute about 11 percent of the ARCS costs at the end of the

10-year contract period. However, halfway through the life of these contracts, these costs accounted for 23 percent of contract costs, making it unlikely that EPA will be able to achieve its target percentage. EPA anticipated that program management costs would represent a higher proportion of contractors' costs in the early years of the contracts—because of start-up costs the ARCS contractors were expected to incur—and would then diminish in the latter years of the contracts as the remedial work load increased. Although the yearly percentage of these costs has declined—from 69 percent in fiscal year 1988 to 15 percent in fiscal year 1992—program management costs have been much greater than anticipated, primarily because the anticipated work load never materialized or went to others.

The high ARCS program management costs can be attributed to a number of factors. First, in awarding the contracts, EPA built in excess contract capacity and increased the number of contractors involved from 5 to 45 to avoid future capacity shortages and to allow for the termination of poor performers. Second, EPA made several key policy decisions—such as implementing a new enforcement-first policy that compels parties responsible for site contamination to manage and pay for cleanups—that effectively reduced the amount of work available for ARCS contractors. Finally, although EPA was aware of high ARCS program management costs as early as October 1989, it did not initiate action to correct the problem, such as terminating contractors as originally planned, until the beginning of fiscal year 1992.

Although EPA's actions have lowered the percentage of program management costs, they have not entirely resolved the problem. In some regions, significant excess contract capacity remains that, if left unresolved, may ultimately cost the government millions of dollars in unnecessary program management costs. Moreover, nearly one of every five ARCS contracts continues to charge program management costs in excess of 20 percent of total contract costs. In regions that still have excess contract capacity, terminating one or more contracts could reduce program management costs by millions of dollars over the remaining life of the ARCS contracts.

EPA's New Cleanup Contracts Are More Flexible

EPA is currently developing new cleanup contracts, known as Response Action Contracts (RACS), that will supplement and eventually replace the ARCS contracts as they expire. The regions will begin to run out of ARCS capacity in 1994, according to EPA. EPA has prepared work load forecasts to

estimate contracting needs, ensure the continuity of cleanup work upon the expiration of the ARCS contracts, and help control program management costs.

EPA is designing the new RACS contracts with features to particularly address key deficiencies of the ARCS contracts—features to help avoid excess capacity and high program management costs. For example, EPA plans to reduce the overall number of contractors and the contracts' duration. EPA will also be able to adjust the RACS design as needed for future procurements. Finally, detailed cost breakdowns and a new award fee process should make it easier for EPA to monitor and control costs.

Major policy initiatives now being developed at EPA, such as the Superfund Accelerated Cleanup Model (SACM) to help expedite cleanups, and Superfund's upcoming reauthorization may affect RACS' contracting needs. To avoid the types of problems that have occurred under previous cleanup contracts, EPA will need contracts flexible enough to avoid excessive costs under a variety of possible scenarios. The ultimate usefulness of the flexibility built into RACS contracts depends, however, on EPA's ability to utilize these features wisely and decisively in response to changing contracting needs and to coordinate the development and implementation of SACM.

Recommendations

To minimize program management costs, GAO recommends that EPA analyze ARCS contracts to determine whether terminating some contracts would be more cost-effective than continuing to pay program management costs for the remaining life of underutilized contracts. GAO also recommends that EPA coordinate the development and implementation of SACM and other policy initiatives, as well as major program changes that may occur during Superfund's reauthorization, and modify the RACS contract design as needed to avoid unnecessary government costs once these contracts become effective.

Agency Comments

GAO discussed this report with program officials from EPA's Offices of Solid Waste and Emergency Response and Administration and Resource Management and incorporated their comments where appropriate. These officials generally agreed that the facts presented in this report are correct, but not all officials agreed that terminations are warranted. We believe that until EPA performs a cost-effectiveness analysis, it does not have an adequate basis for excluding the financial merits of contract terminations. As agreed, GAO did not obtain written EPA comments on a draft of this report.

SUPERFUND REAUTHORIZATION

WEDNESDAY, JULY 28, 1993

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON SUPERFUND, RECYCLING, AND
SOLID WASTE MANAGEMENT,
Washington, DC.

STATE AND LOCAL INVOLVEMENT IN SUPERFUND CLEANUPS

The subcommittee met, pursuant to notice, at 12:35 p.m. in room 406, Dirksen Senate Office Building, Hon. Frank R. Lautenberg [Chairman of the subcommittee] presiding.

Present: Senators Lautenberg, Warner, and Durenberger.

OPENING STATEMENT OF HON. FRANK LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator LAUTENBERG. I will call this hearing to order.

We are delighted to see all of you, and appreciate your being with us for this hearing. We are delighted to be joined by our distinguished colleague, Senator Warner from Virginia.

Today we continue our hearings on Superfund reauthorization by looking at the appropriate role of State and local communities in the cleanup program.

As we have learned, 41 million Americans live within four miles of Superfund sites that can cause cancer, heart disease, birth defects, and other illnesses.

The people who live near these sites want them cleaned up as quickly as we can, and I share that view. One of the reasons that these cleanups have been so slow is that EPA and the States have duplicated efforts and have squandered time in deciding among themselves and the responsible parties who are included how to go about the cleanup.

A way to deal with that might be to give qualified States a greater role in carrying out the Superfund program. As we are going to hear today, some States might actually be willing to receive a full delegation of the Superfund program that is currently done largely at the Federal level.

The implications of that kind of a decision will be enormous and raise many questions that must be answered.

How should we fund such a program among the various States? How much of the program should we delegate? Should we give States authority over particular sites or particular types of cleanups? How will we ensure that States do a good job once they have been given the program and we have given them the money.

One of my goals for Superfund reform is more efficient, quicker, and more thorough cleanups, but we mustn't undertake change for change's sake and call it reform.

State representatives have argued for more delegation to themselves. They feel that they have the capability to take on more responsibility and that this will have a positive effect on the program.

Today we are going to explore the question and see if States have the capability to take on more responsibility and, if more delegation is to occur, what are the assignments that we should give them?

If this isn't carefully examined, the delegation of these responsibilities could disrupt the program for years to come without ultimately producing real progress or positive results.

The American people want to see results in this program. They are tired of waiting for them and are very skeptical about our capacity to complete the job.

We are also going to consider today a second, very important issue: making sure that local communities, which have the most at stake in cleaning up sites, have a full opportunity to be involved in the cleanup process.

One of the major failings of the Superfund program has been the bureaucratic way in which EPA has interacted with local communities and the citizens that reside there. That's got to change.

In 1986, I authored important provisions in the Superfund law to enhance public participation by providing for technical assistance grants from EPA. These TAGs, as they are known, and other mechanisms for providing resources and formal avenues of access for the public, are especially important for the communities who are disadvantaged otherwise and wouldn't be able to make their voices heard.

Unfortunately, as we are going to hear today from both community representatives and companies working for responsible parties, the previous Administrations have had serious problems in administering the TAG program and, indeed, in giving local communities much of a say in the cleanup process.

I am committed to ensuring that minority and low-income communities, which may already face disenfranchisement because of their lack of resources, will finally get their voice heard in this cleanup process.

I look forward to hearing from our distinguished witnesses today about ways to involve the States and the local communities to a greater extent in the cleanup of Superfund sites and, of course, with the question overhanging about what it is that we accomplish if we so designate these communities and States to have a larger responsibility.

As I said earlier, I am pleased to be joined by a colleague on the Environment and Public Works Committee from the State of Virginia, Senator Warner.

Senator, do you have an opening statement you would like to make?

OPENING STATEMENT OF HON. JOHN W. WARNER, U.S. SENATOR FROM THE COMMONWEALTH OF VIRGINIA

Senator WARNER. Just an observation.

First, Mr. Chairman, I would like to again commend you for your foresight on having this hearing, and even initiate this subject. You have a growing reputation in the Senate as a man of courage and independence, and it is going to take that type of leadership to get this done, because I think there will be a reluctance on the part of the Federal Government to begin to yield some of their jurisdiction.

I solidly support this concept and will work with you on achieving a goal.

It seems to me that EPA has struggled with this for about a decade now, and it is time to give the States a greater share. The States share in determining the magnitude of the problem, but the remedy is pretty much exclusively in the jurisdiction of the Federal Government.

What we've got to make certain as we draw up this legislation—assuming a number of our colleagues will join—is that there are certain minimum standards to operate a program. If a State is going to take this on and is involved in Superfund operation, then it has to dedicate some of its resources to establish the infrastructure that can work effectively as a partner with the EPA in reaching the desired results.

I don't want to see the overall objective of Superfund slip backward as we grant States this authority. That's a challenge that is before us.

Thank you, Mr. Chairman.

Senator LAUTENBERG. Thank you very much, Senator Warner.

Senator Durenberger, do you have some opening remarks that you would like to make?

OPENING STATEMENT OF HON. DAVE DURENBERGER, U.S. SENATOR FROM THE STATE OF MINNESOTA

Senator DURENBERGER. Yes, Mr. Chairman, thank you.

I will join with you and my colleagues in welcoming an excellent panel of witnesses for the hearing this afternoon.

As we begin the inquiry into the State role in the Superfund program, I would like to make four brief observations, which I will elaborate on later, not now.

First, States are already cleaning up most of the Nation's abandoned waste and petroleum sites. The Superfund program may deal with the biggest and most difficult sites, but States right now are responding successfully to problems with thousands of old industrial and commercial sites across the country.

The second observation is that the Federal response to the Superfund program hasn't worked very well. Some may still hold out hope that EPA is about to turn the corner on management problems that plague the program, but, as I said at an earlier hearing I think it is already too late.

I am persuaded that Congress will not reauthorize the Superfund program without fundamental reforms. It is likely that the State

role will be to save Superfund from extinction. In other words, that's the position that we are going to hear from a lot of States.

Third, the sites that we are now trying to clean up under the Superfund program were not created on our watch. The Federal Government didn't have laws addressing the practices that create Superfund sites until the 1970's. And the laws like RCRA that we did adopt address only a small portion of the potential problem.

Groundwater protection, like elementary and secondary education, for example, was always the State responsibility. And most States continue to vehemently oppose any Federal effort to generally protect groundwater quality.

As we have too often in recent era, the Federal Government naively volunteered to solve the abandoned hazardous waste problem without understanding the degree or the difficulty of the undertaking. We thought we could step in and quickly get in hand the problem that was overwhelming the capacity of the States. I think we were wrong.

We might have been better advised to conduct a long series of oversight hearings on the State responsibility to protect groundwater quality.

So, Mr. Chairman, those three observations would support a relatively radical restructuring of the Superfund program, and we might have a Ronald Reagan-style evolution, for example, in groundwater protection as a State responsibility. They are cleaning up the sites and we aren't. Enough said.

I have a fourth point to make. It turns out that the monster side of Superfund—joint and several liability, contribution suits, drinking water standards to guide cleanup, pump and treat for whole generation—have made Superfund the best groundwater protection program ever invented.

Fear of Superfund liability has dramatically changed industrial waste management practices—and practically all for the better. So Superfund works to prevent new sites.

Whatever we do about the old sites, let's not kill the monster, as I called it—that is, Superfund—all together. Maybe some States can manage the cleanup of even NPL sites better than EPA can. Maybe many States—even some of the biggest—don't have the full range of Superfund authorities that have made it so effective in preventing new cases of groundwater contamination.

So, Mr. Chairman, those are the issues in sort of the framework within which I welcome the witnesses to this hearing. I congratulate you for having it.

Senator LAUTENBERG. And I welcome your participation. You are always thought provoking. I would invite our distinguished witnesses from the first panel to the table: Tom Jorling, Paul Didier, and David Markell. Please join us at the witness table.

It is good to see you. What we ask here is a summary of your text. We will introduce the full text into the record, but we would ask, in order to move things along, that you consolidate your remarks to a five-minute time period. The clock will reflect five minutes of elapsed time, with an orange light indicating one more minute and a red light, time is up. But, we will allow you modest latitude and would start with Tom Jorling, who is the Commissioner of the New York State Department of Conservation.

Tom, it is a pleasure to see you. Please give your testimony.

STATEMENT OF THOMAS JORLING, COMMISSIONER, NEW YORK STATE DEPARTMENT OF CONSERVATION, ACCOMPANIED BY ANN DeBARBIERI, DEPUTY COMMISSIONER, SUPERFUND PROGRAM

Mr. JORLING. Thank you, Mr. Chairman and members of the committee. It is a pleasure to return to the committee, this time on the subject of Superfund, improvement to its implementation, and the effort of Congress to review it with that in mind.

I have submitted testimony for the record that includes background on the New York State program, for which I have been responsible now for some six and a half years. With me is Ann DeBarbieri, who is the Deputy Commissioner for the actual administration of that program.

In my prepared testimony, I also provide a general description of the EPA DEC relationship as it is being conducted now. I identify some problems with the Federal program, and then go on and spend most of the prepared statement advocating a more explicit and fulsome delegation to qualifying States.

What I would like to do now is just briefly summarize a few points.

First of all, I think I share with Senator Durenberger the notion that Superfund needs to be evaluated for what it has achieved and for some of the elements that people take for granted that are extremely important public policy. These elements need to be identified and preserved because they serve a compelling public interest.

One of the things that I continually do is review many of the academic, analytical advocacy group analyses of Superfund. As you know, President Carter's proposal for Superfund back in 1979 emanated from the office that I was responsible for in EPA back in that period, so I have more than a passing interest in the evolution of Superfund.

But one of the things that I repeatedly am struck by is the air of unreality that is connected to some of these analyses which conclude that the Superfund program may not be addressing an important problem. One of the things I can do is invite any of those analysts out to a neighborhood where there is a problem site and ask if they do not think that public authority should respond to that situation.

These people are struck with fear and uncertainty, and it is important that the public authority respond to that fear and uncertainty. That's the nature of our democratic process.

If some academician in isolation says this program, against all risks that we face as an industrial society, isn't as high as others that I would identify, they need to be moderated and influenced by the actual public perception and public uncertainty that results from having a site of this sort identified in your neighborhood.

We do face a very crucial period with the implementation of Superfund, as well as all environmental regulatory and programs that are administered by the State and Federal Governments. It is simply the fact that we have a very limited body of public resources at any level—local, State, or Federal level—to address the

multiple problems that confront us. Therefore, it is especially important as a programmatic matter that we utilize these scarce resources to the maximum extent possible, and to avoid redundancy and duplication. We must use these scarce public resources very, very well, indeed.

As is often the case when we analyze a program of public administration, we typically characterize "EPA as doing this" or "the States as doing that" in a negative way, and I want to assure this committee that, having been responsible for a group of public servants at EPA earlier, and now a group of public servants in the State of New York, the quality of the public servants that are conducting this program and others is as high as it has ever been. Their dedication and their professionalism is very good.

Again, I invite any of these abstract analysts to go into the field with a State or Federal official and deal with the technical uncertainty, the political uncertainty—in the small "p" sense—that surrounds any of these sites, and you will see delivered in the field very high-quality public service.

So I want to make sure that, as people evaluate these things and find institutional scapegoats, that they understand that the public servants are doing excellent work in very, very difficult circumstances.

So we need to have a very pragmatic approach for directing scarce resources, and that calls for, in our judgment, more delegation of responsibility from the Federal government to the States.

The issues that concern any question of delegation are whether or not there is going to be consistency across States and across issues, and then also the questions arise, as they must arise, on accountability. What accountability devices do you have for technical competence, technical quality, and for financial and other administrative use of public resources?

Those questions plaque all of the environmental programs for which Federal statute provides for delegation, and we have now developed some very mature and in my judgment very, efficacious ways of dealing with them.

I would only add, on the consistency issue, that in Superfund we would make a mistake if we assumed that every site should be treated to the exact same level of concentration of a given chemical. Consistency demands consistency of methodology. The methodology is what will determine what is actually done at a given site.

Each site, whether it is an the NPL list, will ultimately get on the NPL list, or is on a State list of various sorts, presents a unique situation that does not comport to a hornbook or engineering data book of some sort. Only by requiring that consistent methodology be applied will consistency be achieved by States.

The second thing on accountability concerns technical and financial accountability. We, in the States—especially those States that are capable of receiving delegation, have the same kind of technical capability and resources as the Federal Government. We are not stepchildren, and I can say this now, that I have served at both the Federal and State level. There is equal competence in technical capability between federal and State regulators.

On the financial side, again, the States have contracting procedures and review mechanisms conducted by our equivalent to the

General Accounting Office and Office of Management and Budget, and these procedures and mechanisms are equally as stringent as the Federal systems of accountability. Of course, the performance by delegated States will be monitored by EPA oversight reviews, as they are in other delegated programs like clean water, clean air, and RCRA. So these problems, these issues, can be overcome.

I'll conclude by simply saying we have no recourse but to make use of this kind of administration if we are to apply our scarce public resources—staff, as well as dollars available for actual clean-up—wisely into the next decade.

Senator LAUTENBERG. Thank you very much, Mr. Jorling.

Mr. Didier?

STATEMENT OF PAUL DIDIER, PRESIDENT, ASSOCIATION OF STATE AND TERRITORIAL SOLID WASTE MANAGEMENT OFFICIALS, WASHINGTON, DC

Mr. DIDIER. Mr. Chairman and members of the subcommittee, thank you.

Good afternoon. I'm Paul Didier. I'm Director of Wisconsin's Solid and Hazardous Waste Program. I'm also currently President of the Association of State and Territorial Solid Waste Management Officials, which is called ASTSWMO, for short.

Our association, as you may know, represents the collective interests of waste program directors in the States and territories. We have been working closely with EPA to share the objectives of the Congress and public in providing safe, effective, and timely investigation and cleanup of the many contaminated sites across this Nation.

I'm sure you can understand we have a fundamental interest in the dialog surrounding the issue of the appropriate State role in Superfund. We are extremely appreciative to have this opportunity to offer our perspective to this debate.

Through our Superfund Subcommittee in the association,—we are exploring several alternatives for increasing the State role. Unfortunately, we have not completed our work on these ideas but, in order to be responsive to the Congress' schedule, we are providing our preliminary ideas at this time.

As you so aptly noted, in the early 1980's States were just beginning to evaluate the need to develop their own cleanup programs. I know in Wisconsin we began to see a gap between the Federal Superfund program and the sites that we were facing.

As of 1990 I can say 41 States have adopted a State Superfund law and some form of liability, and 44 States have also developed funding authorities—two very essential components to implementing an effective State cleanup program.

I think it has been said by several people already today that States now remediate the vast majority of the sites across the Nation—maybe not all the most complex ones, but the vast majority.

Regrettably, the current Superfund process, as structured, does not recognize or utilize State capabilities to the extent we believe possible. For example, we don't have a lot of influence over the list-

ing process, and yet we are closer to the sites, their history, and relative risks.

In Wisconsin, for example, we have nominated 12 additional sites which EPA has not acted on, as yet, and they have been sitting there for quite some time.

We also are not authorized to select the remedy, and often are overruled on our proposals for the correct remedy. This results in wasteful duplication, lengthy disputes about standards, and excessive delays, and we believe efficiency and consistency could be better served if the maximum number of sites are to be addressed.

Let me just briefly talk about the recommended State role.

Really, if you look at it, Superfund is the only major environmental program not delegated and implemented by the States. We have the RCRA hazardous waste programs, the leaking underground storage tank program, the Clean Water Act, the Clean Air Act, and the Safe Drinking Water Act. All are delegated to the States.

We believe very strongly that some form of delegation available to States under Superfund would increase the capacity for site cleanup by maximizing use of limited Federal and State resources. It would minimize conflicts, provide greater certainty in enforcement actions, and allow greater flexibility, and we hope would return more sites to productive use more quickly.

As I indicated, ASTSWMO is exploring several alternatives for an increased State role. I would like to now briefly discuss our evolving thinking about how a delegated Superfund program might function. I must note, however, that the ideas I am about to present are very preliminary and cannot be considered to represent a full consensus among all our members.

I believe I can best describe our views under five key outcomes we would like to see in the reauthorization process.

The first would be the scope of the program. CERCLA should include all sites requiring cleanup. This cannot ignore the present NPL schedule, of course, nor the finite trust fund limitations, but should reflect the need to delegate some current EPA authorities to willing and able States.

To achieve this result, we would envision the development of a registry exclusive of RCRA authorities that would be a full list of all the sites needing cleanup—not those that are just potentially suspected contaminated sites, but the ones that really need the cleanup. And from this list we would develop a subset of sites requiring public funding—a true priority list based on the severity and lack of willing or able responsible parties.

Second, the State role. We are strongly committed to an expanded State role by which capable States may seek authority to implement Superfund. States are prepared to be accountable, but we need the flexibility to implement the program. Here are some options on how a delegated program might function:

First, there would be qualifying criteria. Congress would direct EPA to work with the States to develop those criteria.

Second, there would be a determination of qualification. States could self-certify, like we do under the underground storage tank program. There would be provisions for voluntary delegation to

three primary components: site identification, remedial cleanup, and immediate removal.

Funding would be provided through two-year program grants, very much like the underground storage tank program operates.

The third area would be public-financed cleanups. We believe a careful reevaluation is needed of how Federal funds are used and how cost-share requirements might impact the States and others. As managers, however, our expertise is in using these funds, of course, not how they are collected, so we would prefer to leave this area of comment to our governors and State legislators.

The fourth area would be liability. We remain strongly committed to the current central principle of strict joint and several liability. I think you put it appropriately as the monster.

And the fifth area is that US EPA's role needs to be clearly defined: ensuring proper implementation across the Nation; monitoring and auditing the State programs; establishing minimum State program requirements; implementing the programs in States electing not to seek delegation; providing technical assistance, training, and research—all of this with a focus on establishing national cleanup approaches, standards, and methodologies to enhance further cleanup decisions.

In conclusion, the reauthorized Superfund should provide a system under which all sites subject to the jurisdiction of Superfund can be eligible for remediation, and effectively utilize the limited resources of both Federal and State agencies to clean up the largest number of sites possible.

ASTSWMO will continue to research options for the most effective use of State resources, and we hope to complete our work on this early this fall. Clearly, there are many unanswered questions concerning implementation and any transition process from the current program. In the meantime, our association will welcome the opportunity to continue to work with your subcommittee staff.

Thank you again. I would be glad to try to answer any questions when we have the opportunity.

Senator LAUTENBERG. Thank you very much, Mr. Didier.

Professor Markell, welcome.

STATEMENT OF DAVID MARKELL, ASSISTANT PROFESSOR, ALBANY LAW SCHOOL

Mr. MARKELL. Thank you, Senator and Senator Durenberger.

My name is Dave Markell. I'm an assistant professor at Albany Law School. Before joining academics a year ago, I actually worked for Commissioner Jorling at the DEC for about four and a half years, where I was head of the State's enforcement program. I have also worked at the EPA in its office in Boston, and for the U.S. Department of Justice. So, like Commissioner Jorling, I have seen the State/EPA relationship from both sides of the fence.

In addition to my personal experience regarding the role of States in the Superfund program, I recently completed a significant study on that issue. I interviewed more than 30 individuals representing all the major stakeholders in the Superfund process—Federal officials, State officials, etc.—to try to get a sense of what those officials thought the future shape of the State and Federal

role should be. And I just recently completed a lengthy law review article that summarizes my findings.

In the written testimony that I submitted to this subcommittee, I summarized what I believe to be the major issues in the Federal/State relationship. What I would like to do in the next couple of minutes this afternoon is to hit three of the highlights from that testimony.

First, one fundamental objective of the Federal program ought to be to try to strengthen State Superfund programs. As Senator Durenberger said in his introductory remarks, the NPL is really just the tip of the iceberg in terms of the hazardous waste site problem in this country. Many States, including New York and Minnesota, have developed highly successful and capable programs.

One of EPA's and the Federal Government's primary objectives ought to be to restructure the Federal program to enhance States' ability to clean up sites under their State programs.

I discuss various strategies for accomplishing that goal in my testimony, as well as in the article. There undoubtedly are other strategies, as well.

Point two: the Federal Government also needs to change its policy toward NPL sites and appropriate the State role with respect to those sites. EPA really should have a "bias", if you will, toward more fully involving States in the Federal program. For example, as Mr. Didier suggested, EPA should essentially encourage States to take the full set of site obligations for themselves, from the investigation of a site through the cleanup phase.

Instead, what traditionally has happened is that EPA has reserved for itself the right to make the decision on remedy. Again, my view is that, given the enormous size of the hazardous waste site problem in this country, it behooves all of us to try to operate more efficiently, and when there are States that are capable and interested in handling sites, whether they be on the NPL or not on the NPL, EPA's bias ought to be to try to let those States do it, with appropriate conditions, of course.

Point three is that, based on the research I have done, I believe that the current structure of the Federal Superfund program actually encourages duplication of effort and conflict between the Federal Government and the States in a number of ways.

A lot of folks I talked with called it the "two cooks in the kitchen syndrome," and I believe that at least two changes to CERCLA's structure are needed to address this problem.

First, I think we need to shift from the current approach, which is "a lead agency/support agency" approach. Under that approach, both the States and the Federal Government end up being intimately involved in handling the same sites. When you have that happen, you inevitably have conflicts and duplication of effort. I think we've got to figure out a way to move to a system that encourages States to act independently and EPA to act independently so that we use our collective resources as efficiently as possible.

I make several suggestions for how to do that at a very practical level in my written testimony.

The second structural issue that I want to mention that I think also results in duplication of effort and conflict has to do with the cost share requirements in the CERCLA program. According to

EPA's interpretation—and I haven't read the recent NCP decision yet by the Court of Appeals for the D.C. Circuit but, based on a summary I have seen, it appears that the D.C. Circuit has endorsed EPA's approach at this point—States' cost-share obligations include paying 10 percent of the construction costs for a site and 100 percent of the operation and maintenance, or O&M costs; whereas EPA pays 90 percent of the construction costs and 0 percent of O&M. This structure shifts cost-share responsibilities for both EPA and States as the process unfolds, so that States have different cost-share responsibilities for one part of the process vis a vis another part, as does EPA.

This shifting of responsibilities gives States a financial incentive to push for remedies that involve extensive construction and minimal O&M, and it actually gives EPA the opposite financial incentive—to push for remedies that involve little construction and lots of O&M.

One structural change that Congress should consider making as it considers Superfund for reauthorization is to level out the cost-share so that the structure of Superfund itself does not create incentives for conflict and duplication.

Thank you very much.

Senator LAUTENBERG. Thank you very much.

We are getting a message that runs through the testimony—"Give us better tools to help us to do our job better, but let us do the job." When you have something as sensitive as Superfund—complicated, various factors, not just the science and the technology factors, but community and funding, etc., there is a tendency to not want to lose control.

It is a very difficult program to manage, which we have seen over these last years. On the other hand, I don't get too many detractors who say, "Let's dump the program." I don't hear that at all. As a matter of fact, we heard a comment from Senator Durenberger, who I described earlier as thoughtful—he is that. He credits the program with having helped protect water quality. I appreciate that comment. Even though we do not always agree on process, we are inclined more to agree on objective.

I wanted to ask Tom Jorling or Paul Didier, what are the main reasons why delegating the Superfund programs to the States might result in faster, protective cleanups.

Mr. JORLING. There are a number of reasons, and I think most of them are practical.

In New York, for instance, we have 400 people who are scattered across our nine regional offices who are, by definition, very close to the sites that they are responsible for.

EPA, on the other hand, has its staff located in New York City, which is a very substantial distance, just pragmatically, from the sites that they are responsible for administering. It takes more time to schedule meetings and site visits. There is less opportunity for the day-to-day observation of contractors and PRPs so that the actual hands-on observation, management, and administration of the program is easier done by States than by the Federal Government.

Second, the States generally have staffs that are more accountable to the circumstances in the field. One of the things that per-

plexes the Superfund program is how to reduce public uncertainty and appreciate the public view of what is going on. That is best done where people are there learning the people's names, and interacting with them on a regular basis.

I can attest, from both the experience at the Federal level as well as at the State level, EPA officials tend to fly out, visit, and fly back. In a sense, they are immune from the urgency that the people feel and the urgency that the contractors might feel. Then they turn to another place which they fly off to. It is a remote kind of approach to the management of these kinds of projects.

The technical and financial accountability of State governments—those which would have to qualify—is equally stringent to anything that the Federal Government does, so that there is no difference between the capacity and competence of a State engineer and a Federal engineer. The question is who has actual, physical, hands-on knowledge of a site.

Again, these are human behaviors. As you point out, control is something that people are motivated by. Often, when you look at a site and you try and choose what the best course of action is, you are really negotiating a deal as to the best way to spend either private or public resources.

For a perfect cleanup, you would have a ring of monitors around the site and then you would have various pump and treat options, or you would have excavate down to a very low concentration. But in the field, you must make judgments as to—well, we'll have fewer monitors so we can have more pump, or we'll have more excavation and less monitoring over the long term. You make judgments that are informed by professional experience and by physical circumstances that I think are the closest to the best judgments that can be made.

When you are removed from the filed the observation and review of site cleanups is much more abstract. So EPA staff may say, "Well, we think you should have more monitors," or, "We think you should do more pump and treat," or, "We think you should get a higher level of excavation," because they are not looking at the site, they are looking at some theoretical hornbook that says, "This is what you should do."

Senator LAUTENBERG. How about the value of hands-on experience with a site of similar toxicity, contamination, size, etc., at some distant place that is not always going to be found within a State's borders?

Unfortunately, my State has an abundance of Superfund sites, and very serious ones, NPL sites galore. We have over 10 percent of the NPL sites, even though we are just that one tiny State.

Mr. Didier, what do you see as the efficiency factor in turning these programs over to the States to manage?

Mr. DIDIER. Let me just start out by saying I agree with Tom Jorling's evaluation. Those are some of the things I was going to say. But, to go beyond what you are asking now, really, in giving all due credit to EPA, we have learned much from the issues that EPA has faced in the early development of the Superfund program in developing our own programs.

I think, if my State is any example—and we are not a big, big State in Superfund—we have developed expertise in the various

areas, which started from our cornerstone program, the solid waste management program. We have had to deal with landfills throughout, and we are very proud of that program.

Our biggest site, our highest-scoring Superfund site, a big, major landfill in the Milwaukee area that took hazardous waste of every combination you could think of, Senator, is already done and cleaned up, and we did it with State program expertise. We had the expertise to deal with that, and that site is all buttoned up. I don't know if EPA is going to start to second guess us on that one. The Omega Hills Landfill has a comprehensive remedy already completed.

So I think that the expertise—we can have some confidence that the States going to go for State authority are going to be able to demonstrate that they've got the expertise to deal with the more complex sites. And if they don't, they'll seek it through other sources of expertise to deal with those more complex issues.

Senator LAUTENBERG. Are they frank enough and candid enough to recognize their own weaknesses or lack of organization, support to get out there? Not too many States—of course, we have the exceptions at this table, but there are not too many folks who would say, "Hey, listen, this is really over our heads and we've got to reach out."

How many States don't have the expertise or knowledge to then——

Mr. DIDIER. I wish I knew that. I wish I could answer that more affirmatively. But I don't.

We are doing some survey work—I didn't mention it, but it is in the testimony—to see what the States' capabilities are in the various areas, and we are asking about nine or ten key questions. That's a good question, though.

Senator LAUTENBERG. Because I think we could all agree that shortening the geography and so forth—but we're talking about fairly significant organizational strength. You have 400 people, Tom, in your——

Mr. JORLING. More than 400.

Senator LAUTENBERG. More than 400 in the State of New York. Now, you've got a significant amount of geography to cover but, nevertheless, certain key skills get moved around and others are resident in the area. Construction is construction is construction very often, so once you get the kind of supervisory skill in there that you need, then the rest is relatively common construction work.

I don't know that the geography argument holds a lot of promise. What there is, however, is the ability to have someone in place who is going to be there on a day-to-day basis because this does require, especially in the developmental phases, someone to watch everything—or some persons to watch everything.

Professor Markell, what do you see with this question? Delegation? You speak for delegation in your remarks. What are the best results that one might get from delegation? And, on the other hand, what do you see as a disadvantage, if any?

Mr. MARKELL. I think, Senator, it depends in part on how you define delegation, what actually it means in the field, how it is done.

I do think, as I said in my remarks and as I said in my testimony and as I say in my article, that EPA has got to be much more aggressive about giving States who want to play a role in the Federal Superfund program and who are capable of doing that, the opportunity to play that role. The collective resources of the Federal and State governments have to be used much more efficiently than I think they are under the current system. One option is the concept of *ad hoc* delegation, which I think is clearly a good idea, in which EPA gives States on an *ad hoc* basis (whether that be site by site or type-of-site by type-of-site), authority to conduct work States can and are willing to handle.

Ad hoc delegation is an idea whose time has come. It should be embodied in a reauthorized Superfund statute if EPA is not prepared to make those kinds of accommodations at this point from the administrative standpoint.

Senator LAUTENBERG. Are you suggesting that "Here is a site; let's now just get out in the community, get out in the region, and put together a manager to deal with this site"? When you use the term "ad hoc"——

Mr. MARKELL. If I may, what I am suggesting is that there may be sites in the State of New York, for example, which New York is ready and able to handle that are on the NPL. Today, if New York wanted to, it could take the lead probably in handling those sites. But the way Superfund is structured, merely by being the lead doesn't necessarily mean that much for New York or for creating efficiency in the system because, according to the way cooperative agreements are written under the Federal Superfund law, even if New York is taking the lead and spending its resources to do all the work, EPA, by law, has to be substantially involved in the same project. To me, that makes little sense.

I think that if States are willing and able to take the lead, what has to happen is EPA has got to come up with a more truncated form of oversight so it is not necessarily going to be substantially involved in the same sites. I don't think that redundancy of effort's an efficient way to operate, and I think we've got to move away from that.

Senator LAUTENBERG. Are we talking about yardsticks, definitions of responsibility by which we measure qualification and resource so you would then kind of use a matrix and say, "This given State qualifies to manage this given site based on their skills and the complexity."?

Mr. MARKELL. Right. And if they are capable, then I think even if that site is on the NPL that EPA's strategy should be to allow the State to do so.

I think that fundamentally one of EPA's responsibilities in this country is to foster the creation of a level playing field, so that sites located in a State that doesn't have an active program are treated similarly to sites that are located in an active State.

If there is a State like New York that is interested in and capable of handling a particular site, then I see little reason for EPA to invest a lot of resources in dealing with that site. Instead, I think EPA should be putting its resources toward sites that otherwise wouldn't receive State attention.

Senator LAUTENBERG. Senator Durenberger?

Senator DURENBERGER. Mr. Markell, I'm going to try to clarify where you were with the chairman.

I was thinking about it in the context of recommendations. I think it was a comment Mr. Jorling or Mr. Didier made relative to partial delegation and thinking about RCRA.

Is there some nice clean, precise way to prevent the current confusion that exists where the States issue the permits but EPA keeps back the authority to determine how clean is clean and what are the particular remedial actions that are going to have to be taken, and so forth? Is there a way to overcome that one?

Mr. MARKELL. I'm going to convey to you what I was told when I was interviewing people from around the country on what role States should play in the Federal Superfund program, because we did turn to the issue of how relationships in other programs operate.

My understanding is that, despite the fact that there are no cleanup standards in the UST program, that program has been delegated, States have been given broad autonomy to do whatever they prefer on cleanups, and that's the way that program has worked.

I don't want to make a positive judgment on the efficacy of that program or a negative judgment, but my understanding is that the UST program has moved in the direction of giving States the authority to handle cleanups, etc., without EPA reserving to itself the right to make the ultimate decision on cleanup for each of those sites.

That's an instance in which it has been tried. It might be worth a more sophisticated analysis to determine to what extent it has been successful and where some of the weak points have cropped up.

Senator DURENBERGER. Mr. Didier?

Mr. DIDIER. I'd like to make a comment on that.

I think, from our perspective in ASTSWMO and with my own State, EPA should be really setting the standards for human exposure, of how clean is clean, and, second, only adopting the methodologies that deal with groundwater and groundwater protection, as you talked about.

All our States are somewhat unique in their geology and their standards, and so forth, so there has got to be—you can adapt a set of methodologies for protection of groundwater, but basically the States have to come through with the standards that do protect that groundwater, just as we are doing in Wisconsin right now with rule making.

Mr. JORLING. I think the problem with splitting responsibility according to certain functions within the overall project would lead, to perpetuation of redundancy and overlap, because public officials will not certify and put their name on the line to approving a project unless they have done all of the preparatory work up to that point. That's the kind of problem.

We have some instruction, I think, that comes from the other programs. There is clearly a Federal interest at one end of the spectrum and a de minimis Federal interest at the other, and there are ways of drawing some lines in there.

In the SPDS program, the water discharge permit program, there are definitions of "minor" or "major." If it is a major permit, the Federal Government has a shot at reviewing that major permit before it becomes effective.

In this case, I think if there were a site which was going to draw on Federal resources—$50 million or $100—then the Federal Government's interest is greater there, and its oversight should be greater there.

But, toward the other end of the Spectrum there should be deference to the States and their competence. Criteria should be established that states must satisfy before delegation would occur at all. Only if a demonstrates State a pattern of failure like in the other delegation agreements, should you withdraw the delegation.

But there needs to be a better application of scarce resources. We do not have extra resources at the Federal or the State level. We have to use funds much more effectively in all of our programs, and certainly this one. By applying to Superfund the very structures we have now worked with in other pollution control programs, we can improve the efficiency, timeliness, and accountability of the program, and justify to the American people that we are responding to this need on a much more expeditious basis.

Senator DURENBERGER. Let me ask you about a State like California that doesn't use joint and several liability, but it needs the Federal liability standard to get effective enforcement at their sites. Also, let's assume it's likely that California is not about to adopt joint and several liability. How do we delegate the cleanup program to that kind of State that doesn't have joint and several liability? Can a State attorney general, for example, use the Federal standard?

Mr. JORLING. There are differences between an "authorization" and a "delegation". A delegation requires the State to have whatever minimum statutory responsibility and authority at its level before that delegation can occur. An authorization can allow that State agency or those State agencies to apply the Federal standards. And perhaps in that difference there lies a solution to the California-type problem.

But it is not unusual for the Federal statute to say, "You must have these minimum authorities before you will qualify for delegation." And then the question for the State becomes: do they want to play in that game? Do they want to adjust their statutes in order to qualify to receive that delegation and carry out that program?

I think that basic carrot approach—"if you want this benefit, you have to have these standards"—is appropriate. And if the State chooses not to do it, then the consequence is Federal implementation of the program in that State.

Senator DURENBERGER. A major issue in delegation is the level of cleanup. Right now I think the State incentive is to seek more stringent cleanup because they get more money the way the current program works.

How would that picture change with delegation? If a State, for example, got a grant through a formula allocation and it had to spread it over all of its sites, would there be any incentive to go for less stringent cleanups? And, if so, how do we deal with that?

Mr. JORLING. I don't think so. As for who is more concerned about achieving an environmentally and health protective outcome, the Federal Government or the State, I would maintain that the States' interest is to be more protective because they are dealing with their real estate, their neighbors, and their voters, and what have you.

I think all of us respect the shortage of public resources, and so all of us are interested in finding an answer that produces a real improvement in the condition at a cost that can be afforded at that site. And so the methodology of choosing that is crucial.

When I look at the disagreements that have occurred between our program and the EPA program at given sites in New York in a record of decision, it is typically on whether or not you should have gone to this level of outcome versus a lesser or different outcome. Arbitrating these differences of opinion consumes a huge amount of our time and oftentimes it becomes a matter as determining the difference in cost to get from one to the other.

I think the methodology that most States are moving toward is are similar to the very cost expective methodology used in wastewater treatment. The cost curve somewhere starts to turn up dramatically toward the vertical, and somewhere in that zone is the best public decision. That's the methodology you use.

If you shoot for an arbitrary cleanup standard, then you, in effect, don't pay any attention to that cost curve and you reduce the amount of resources that you have to distribute across a whole series of sites and we do, in all of our jurisdictions, have many more sites than we will have dollars to address.

It is the methodology, the integrity of that methodology, and the conduct of that methodology that should be reviewed more than the explicit outcome at each site.

Is it two parts per million or two parts per billion? Those are not as important as the issue of what you have done and how soon you have done it.

Mr. MARKELL. If I can just elaborate on that, I'd make two points quickly.

One way to deal with the concern that States might opt for more stringent cleanups, and establishing a cost allocation structure that deals with that concern, is to look at the cost-share, itself.

One of the problems I pointed out with the current scheme is the difference in the cost-share across the process. One suggestion for improving the scheme is to make the cost-share level so that it would be, for example, 90 percent/10 percent across the whole scheme.

But one thing that Congress ought to consider is whether 90/10 is an appropriate split, or whether some other split would make more sense, and whether States, if they have more at stake, are likely to be more "responsible" in terms of the cleanup level they select.

That's one thing you might think about.

A second idea has to do with the concept of applicable or relevant and appropriate requirements. I didn't put this in my testimony, but one aspect of the CERCLA scheme now is that if a State has an applicable or relevant and appropriate requirement that is more stringent than the Federal requirement, EPA is obligated to

include that requirement as part of the remedy at no cost to the State except for as part of its cost share. One thing to think about is whether that structure should be changed so that if a State wants an "enhancement," the State might bear the cost of that enhancement.

Those are a couple of practical suggestions to think about how to ensure that States' financial stakes deal with the concern that you raised.

Mr. DIDIER. One of the things in practical experience that I could relate to you in Wisconsin was two sites—very similar landfill-type sites—that took industrial and hazardous waste and so forth. One ended up in the early Superfund process and it is now ten years later and we are finally getting around to doing the remediation. The other, the public learned from that other one nearby, 20 miles away, and said, "Let's work with the State." In two years now we are cleaning that site up with about 3,000 responsible parties contributing to the whole cleanup, with a some cost-sharing from the State as an initial incentive for responsible parties to come forth.

So I think you see one of the things you can gain with State participation in full Superfund program is that kind of accelerated cleanups with responsible parties.

Senator DURENBERGER. That's what is spurring me to find a solution.

Senator LAUTENBERG. But then what happens. The State has a participation in these decisions now in terms of a cost-share. A State can look at its budget and say, "We just can't afford to spend that much money." There are two areas of delegation, one is: do you delegate the decision-making as to which sites qualify? Is it being suggested that we eliminate the general nature of the NPL and say to the States, "OK, we are going to have a program that makes each State deal with its most serious sites, and apportion the money from public works programs.

Mr. JORLING. Mr. Chairman, I think you touch on an important distinction. I think there needs to be a measure that establishes the Federal interest in participating financially in remediation. That suggests that you need something like an NPL.

Now, I'm not going to argue for the moment that the current ranking system—the hazard ranking system—is the right one. But there needs to be an equilibration across the Nation of those things that justify a Federal interest in remediation, so that there needs to be that identification so that the States that are more capable at playing the game do not qualify for a disproportionate share and get Federal monies to spend on less significant sites than other States or communities, as you point out.

There needs to be some measure of a Federal interest that goes into this.

Senator LAUTENBERG. So that's part A. Identify the sites. Specify which deserve attention.

Then there is the B side of the ledger which says now that we have the sites, we need the management and monitoring. Maybe that's kind of a break point where we say, "All right, take care of those sites and we will provide you with the tools."

You manage them. That might be an effective area of compromise. I'm sure there would be plenty of reason to argue about which site and how you get to it.

We are called to the floor for a vote. I would ask the next panel to be moderately patient and will excuse the current panel.

Thank you very much for your participation. We'll send questions to you if we have any and ask you to respond promptly.

Thank you.

We stand in recess for 10 minutes.

[Recess.]

Senator LAUTENBERG. We call the subcommittee back to order.

I would like to welcome the second panel, Ms. Ferris, Doctor Clark, Jocelyn White. I will try not to hold you too long.

I am happy to see you. What we'll do is ask Ms. Ferris to please give your testimony first. You heard about the five minute rule.

STATEMENT OF DEEOHN FERRIS, LAWYERS' COMMITTEE ON CIVIL RIGHTS, WASHINGTON, DC

Ms. FERRIS. Thank you, Mr. Chairman.

I would like to start out by commending you and thanking you very much for affording environmental justice activists an opportunity to provide input and have access to the public policy process and, most particularly in this case, the Superfund reauthorization process.

I appreciate the opportunity to appear before you today to examine environmental justice issues and the need to meaningfully involve communities in the Superfund process.

I am Program Director of the Lawyers' Committee for Civil Rights Environmental Justice Project, which focuses on developing interdisciplinary cooperation and strategies to prevent and remedy the disproportionate environmental risks experienced by people of color and the poor.

The goal of the Environmental Justice Project is to promote equal environmental protection and develop remedies for the adverse consequences of prior discrimination. Our objective is to obtain environmental equality by providing legal and technical resources to communities of color and the poor in their efforts to combat environmental discrimination and eliminate all barriers to equal environmental protection.

Based on my work with communities who are at risk due to toxic exposures at Superfund sites, I have outlined for you in my written testimony suggested reforms to achieve public awareness and community involvement in the U.S. Environmental Protection Agency's Superfund cleanup process.

As we approach the Superfund reauthorization effort, it is clear that few unequivocally applaud past Superfund performance. Collectively, communities, industry, and government are critical about whether the Superfund program has actually achieved Congressional goals. Discontent and frustration is especially pronounced among low-income communities and communities of color with whom I work. These communities, who are disproportionately exposed to environmental hazards across the board, have also been disproportionately affected by Superfund's ineffectiveness.

For example, according to the widely acclaimed National Law Journal Report on Equal Protection, the Racial Divide, and Environmental Law, communities of color will wait up to four years longer than white communities in getting a Superfund site cleaned up.

This disparate treatment by the Government is especially alarming given the 1987 Toxic Waste and Race in the United States Report commissioned by the United Church of Christ Commission for Racial Justice, which found that three out of every five African American and Latino Americans live in communities with uncontrolled toxic waste sites.

Not only is Superfund disproportionately ineffective, but Superfund is also discriminatorily implemented. For example, once again according to the National Law Journal Report, permanent treatment remedies were selected 22 percent more frequently than containment technologies at sites surrounded by white communities.

In contrast, at sites surrounded by communities of color, containment technologies were selected more frequently than permanent technologies by an average of 7 percent.

As stated by Doctor Robert Bullard, a noted sociologist and researcher on environmental justice issues, "Not only are people of color differentially impacted by pollution, they can expect different treatment by the Government."

Due to this deplorable record, environmental justice activists and communities with whom I work have galvanized to develop and advocate a broad range of reforms to Superfund. Having experienced the most profound deficiencies of Superfund implementation, communities of color and low-income communities are uniquely positioned to offer meaningful suggestions for improving the program.

These suggested reforms touch every phase of the Superfund process, including: assessment of health risks, allocation of liability, and determinations about remedial technologies.

As a primary reform, environmental justice activists are demanding innovative programs that will constitute significant improvements in the role of local communities. Activists demand that citizens must be both better informed and actively involved in the cleanup process, and that Government must be responsive to the concerns of those people in communities who surround Superfund sites.

A central concern of low-income communities and communities of color is Governmental accountability for protecting public health and the environment.

When the agency—EPA—fails to adequately inform and involve the public, concerned citizens are often disconnected from the cleanup process and unable to act as a Government watchdog. Therefore, only those communities which have greater access to political power and legal and technical resources are able to influence the Superfund decision-making process.

As a result, a discriminatory pattern has emerged where communities of color will wait up to four years longer than white communities to have a site cleaned up.

Involving the public in the remedial decision-making process is essential to guarantee that EPA is accountable to all those whose health and environment it is obligated by law to protect. Public

participation is essential because it assures that EPA is accountable, and it is desirable because it will enhance the efficiency and effectiveness of the Superfund program.

As EPA has recognized, "Effective community involvement will speed up the Superfund process by involving the community early in the process in resolving possible conflicts."

By mandating that EPA listen to public concerns, Congress can accomplish three goals: first, we can improve the quality of remedial decisions; second, we can accelerate the speed of the cleanup process, and; third, we can reduce of the ultimate cost of the Superfund program.

The quality of remedial decision-making will be enhanced by mandatory public involvement as a result of the different perspectives that private citizens bring to cleanup efforts. This citizen perspective will provide an important balance to the close working relationship between EPA and potential responsible parties, which has caused many communities to claim that the current decision-making apparatus encourages the fox to guard the hen house.

Public participation can accelerate the pace of the Superfund cleanup process by promoting consensus between EPA, PRPs, and community groups. This consensus model would enhance public support for cleanups and thereby avoid future controversies.

Public distrust of and discontent regarding a Superfund decision can add to the already lengthy time frames associated with cleanups while citizens pursue legal remedies and apply political pressures. Early public participation will avoid excessive delays caused by communities who are understandably suspicious about a closed decision-making process.

A mandate which explicitly provides for public involvement throughout the entire Superfund process is necessary to ensure that the law will fulfill the promise of protecting all citizens equitably and expeditiously.

My written testimony outlines reforms in six key areas which are necessary to statutorily secure a meaningful community role. These areas include: Native American programs, technical assistance grants, community working groups, health assessments, a technologies clearinghouse, and citizen suits.

To summarize, public participation in the Superfund process should not be a discretionary community relations mechanism. Public participation is integral to an effective, expeditiously implemented, and equitable Superfund program benefiting all affected communities.

I strongly urge the United States Senate to incorporate the provisions outlined in my written testimony in the Superfund reauthorization legislation.

Thank you.

Senator LAUTENBERG. Thank you very much, Ms. Ferris.

The full statements of all of you will be included in the record.

Doctor Clark, we will hear from you next.

STATEMENT OF EDWIN H. CLARK, II, PRESIDENT, CLEAN SITES, INC., WASHINGTON, DC

Mr. CLARK. Thank you very much, Mr. Chairman.

My name is Edwin Clark. I am President of Clean Sites, a nonprofit public interest organization dedicated to accelerating cleanup of the Nation's hazardous waste sites. We appreciate the opportunity to testify to the need for expanded community involvement today.

As you may know, our board of directors—which represents a diverse range of people from environmental groups, businesses, EPA officials, public interest groups—is working on a series of recommendations about changes that should be made in Superfund, and one of those issues is public involvement, which we believe is crucial to bringing about a better program.

Based on our experienced analysis, we think the existing public involvement program needs to be improved for at least three reasons.

First of all, we believe the public has a right to a process that is more responsive to their concerns than the existing process.

Our experience is—and we strongly believe—that enhanced public involvement will result in a more effective cleanup process. But we also think that improved public involvement—and here I agree with Ms. Ferris—will increase efficiency by reducing conflict throughout the remedial process.

We have identified three key problems with the current Superfund public participation program. The first is that the current program focuses more on community relations and not on public participation. As I said, the community is asked to respond, not really to participate.

Though the citizen involvement consists primarily of public comment opportunities and public meetings held after a preferred remedy is identified, seldom are the citizens given opportunities to provide information, raise issues of concern, and present their ideas on a preferred remedy.

We see the public's desire for public involvement as a major Superfund concern. Our 1990 report, Improving Remedy Selection, suggested ways to meaningfully involve the public. We are testing them with EPA at the Li Tungsten site on Long Island.

At this site, a citizen advisory committee will participate throughout the remedy selection process by reviewing information, raising concerns, and making recommendations. That's the type of involvement we think ought to take place at every site.

The second problem is the affected public is not brought into the remedial process early or often enough. Citizens want to be involved at the time the site is initially identified and, indeed, throughout the remedial process. We have found that both removal and remedial activities progress better if citizens are involved early and consistently.

For instance, at a large PCB site in the midwest, we successfully turned around a rapidly deteriorating relationship among citizens, EPA, and the PRPs. This was a site that promised to be one of the controversial sites.

We did this by involving the public at the outset of the EPA action. We also stationed a project manager on site and made sure that he was accessible. By the end of the removal, the citizens strongly supported the cleanup program that was progressing and has been progressing very efficiently.

The third problem is the affected public does not have ready access to information and may not have the technical resources necessary to fully understand site information.

Citizens want to receive more information than they do under the existing program. They want to receive information earlier so they can make carefully considered comments. And they want to see draft documents at the same time as others who are involved in the site.

Even if citizens have greater access to the site information, they may have problems understanding the technical material presented in the documents. These are often very long, complicated documents.

The technical assistance grant program has been quite helpful, but the application and accounting processes have been difficult for many community groups.

I should point out that EPA has addressed many of these problems, and we think they have improved the process substantially.

We have seen that open communication and technical assistance helps overcome conflict and keeps site activity moving forward. For example, at one site we are working with PRPs, citizens, and Government officials to identify concerns, present technical information, and fully and openly discuss site activities. Although differences of opinion remain, all the groups are comfortable with this approach and the progress of the site activity.

We do have some preliminary suggestions for improving the public involvement aspect of the Superfund process. These will be finalized this fall when we come up with our reauthorization recommendations. Many of these do not really pertain to changes in the law, but rather to the way it is being implemented.

We believe that EPA must make public involvement a priority and send the message that it is important. Site project managers, as well as community relations personnel, should be trained and prepared to respond to citizen concerns.

Second, we think that early and frequent information sharing should be encouraged.

Third, we think that Congress should carefully review the TAG program. I think it is working well, but there may be a need for increased size of grants.

Finally, we think Congress should look at the different ways to increase public involvement that have been tried. We have used an open, information-sharing approach at some sites, and we have established citizen advisory boards at others. We are pleased to see the Department of Energy is making citizen advisory groups a critical part of its public participation efforts.

Whether citizen involvement is structured through an adversary group or is more informal, it is vital to successful site remediation. This is especially true as the Nation begins to recognize the need to look at sites in the light of their future use.

As we consider returning sites to beneficial use or developing trustworthy protective measures, community input, involvement, and acceptance must be part of our cleanup program.

I also should say, Mr. Chairman, that I had a tendency to jump up in your last panel, because I have recently become Secretary of

the Department of Natural Resources in Delaware. We had some thoughts on that, too, and those are in our prepared statement.

Senator LAUTENBERG. Thank you very much.

Dr. CLARK. Thank you.

Senator LAUTENBERG. Your full statement will be in the record. We invite you, Ms. White, now to give your testimony.

STATEMENT OF JOCELYN WHITE, PRESIDENT, ENVIRONMENTAL ISSUES MANAGEMENT, WASHINGTON, DC

Ms. WHITE. Thank you, Mr. Chairman.

As President and Founder of Environmental Issues Management, Inc., I am pleased to have been invited to testify about my company's experience with EPA's community relations program.

For purposes of today's hearing, I would like to focus primarily on one area, which is program quality. As you will see in this area, most of the 47 additional suggestions on program improvements as set forth in our written testimony can be addressed administratively.

Before I begin, I first would like to give the subcommittee a brief background on EIM.

I founded EIM in 1990 to provide environmental strategic planning and communications counsel to businesses faced with complex environmental issues. EIM specializes in Superfund site issues and has been involved in the cleanup of over 40 hazardous waste sites across the country.

I speak to you today not only as a person with broad experience in Superfund community relations, but also as a citizen who lives on a hazardous waste site. As such, I have experienced many of the same emotions as citizens across the country faced with a hazardous waste site.

I believe that EPA has tried to do a good job with their community relations program, and I have worked with some excellent community relations coordinators, or CRCs. However, there are problem areas where some improvements are necessary.

In order to fix any problem, it is essential to address the root of the problem first. In the case of the community relations program, I believe that the fundamental problem lies in the quality of the staff who implement the program. Each CRC in contact with a citizen represents the entire EPA and therefore should conduct themselves in such a way as to bring credibility to the agency.

Therefore, the most important action to take is to attack the core of the problem by upgrading the quality of the community relations employees. Quality staff leads to quality service.

Mr. Chairman, I think you would agree that the success of ADP, the company which you founded, was a direct result of the quality of the people and the services provided. If ADP's service had been poor, then no amount of additional capital or staff would have made the company the success it is today.

Similarly, without quality staff at EPA, no amount of innovative programs, additional staff, or funding will solve the problem, and we will have made a poor investment and gained nothing. In fact, additional staff resources and programs may only exacerbate an already chronic problem.

I believe that my views on the need for quality in the services that Government provides to its citizen customers is consistent with Vice President Gore's efforts to reinvent Government through his national performance review.

I think we can all agree that mediocre services on the part of the Government are no longer acceptable to most citizens.

The following are suggested solutions:

Hire only qualified people. Perform a quality review of current employees and reorganize as appropriate. Provide remaining CRCs and qualified new CRCs with community relations and risk communication training. Provide funds for training. And, for difficult sites, provide specialized sensitivity training similar to that used by medical schools to teach bedside manners. That program involves doctors playing the role of patient, including wearing hospital gowns with open backs and being left on a gurney in a hallway for many hours. The idea is to put the doctor in the patient's shoes.

If CRCs were put through a similar role-playing scenario related to living next to a Superfund site, then they would have a better understanding of how to treat citizens.

The point here is the need to understand each other's perspectives.

Finally, based on our experience with the TAG program, I have one specific change I would like to recommend be considered.

I think we need clearinghouses made up of citizens with Superfund experience to help other citizens apply for the grant and with how to use the TAG grant.

Mr. Chairman, let me conclude by saying that in considering any major restructuring or budget increases for the community relations program, the first priority needs to be to improve the overall quality of the people implementing the program.

Improving the quality of the community relations program may be a minor change in the whole scheme of Superfund reauthorization, but to the people who live on or near Superfund sites it would be a major and very welcome reform.

Thank you, Mr. Chairman, for allowing me this opportunity to share my views and experiences with you.

Senator LAUTENBERG. Thank you very much, Ms. White.

You know how to tug on a fellow's heartstring when you talk about my old company.

All of your comments are very helpful. I have to vote again. I have a couple of questions which I will have a chance to put to you, and the others will have to submit in writing.

Both Doctor Clark and Ms. Ferris suggested that local community needs require involvement at a much earlier point in EPA's decision-making. If we do that, do we run the risk of slowing down the cleanup process? How do we keep that from becoming a delaying factor?

Ms. FERRIS. May I?

Senator LAUTENBERG. Please.

Ms. FERRIS. Foremost, Senator, I think that communities that live around Superfund sites have the greatest stake in accomplishing effective cleanup, efficient cleanup, and rapid cleanup. And community involvement and speedy, effective cleanups should really go hand-in-hand.

What we have now is a situation where communication between EPA and communities is very largely one way. And, as the gentleman from Clean Sites indicated, communities are often put in a responsive mode, a reactionary mode, instead of a participatory role.

We obviously believe that the earlier communities can get involved, the more valuable their input is in the process and the more effective the cleanup will be as a result of their contribution.

There is nobody who has got a greater stake in a Superfund cleanup than those whose lives and environment is affected by the contamination. We think it is very important to get them involved.

Senator LAUTENBERG. So, you don't see the likelihood of delay occurring as the result of involving community groups?

Ms. FERRIS. I would say that there is always a possibility for delay when parties become interested or have an active interest or are aggrieved about a situation that is going on, but what is most important about that question of delay is in cases where communities are involved and delay is caused as a result of that involvement, if the delay is due to legitimate concerns we must take the time to respond to the concerns.

Senator LAUTENBERG. Doctor Clark, do you have a comment?

Dr. CLARK. I think I am always amused when you talk about concern of delay in Superfund. It is not a program that is charging along rapidly as it is.

Senator LAUTENBERG. I'd say.

Dr. CLARK. But our experience is quite the opposite. If you involve the community groups in a constructive manner up front, you are actually more likely to speed up the process than to slow it down, and make it a lot less confrontational.

The existing process is set up to sort of maximize confrontation, which is where a lot of your delay comes from.

Sure, there may be groups that try to delay things, but this process is expensive for the community groups as well as for the PRPs. And people from the community don't want to spend their life fighting these things. They would rather be involved in working through it. They'd like to get through it as fast as possible, too. It is in their interest as well as everybody else's.

Senator LAUTENBERG. So a delay might be coincident then, a kind of a condition of processes?

Dr. CLARK. Yes. But I think a better process would speed it up.

Senator LAUTENBERG. Ms. White, your testimony invites EPA to conduct more interviews with local officials and public interest groups and citizens. Do you worry about that slowing down the remedy selection process? How can we assure ourselves that we get that input without again presenting an obstruction to getting on with the task?

Ms. WHITE. As you probably know, every site is unique. You may have a large or a very small group interested in the site. So conducting more interviews could speed up the process, slow it down, make no difference at all.

However, I would recommend that EPA increase not necessarily its interviewing process, but its process of actually meeting with citizens to understand in the very beginning, early on, as we said, what their views and needs and concerns EPA should bring citizens

into the process from when the site is listed on the NPL all the way through the remedial action—the end of the whole process.

Senator LAUTENBERG. Ms. Ferris, you recommend raising the amount available under the TAG program. To what level do you think we ought to raise it to?

Ms. FERRIS. This is obviously a topic subject to great controversy, considering that there are contentions out there that we are already wasting a lot of Superfund money. People with whom I work that I talk to about this consider 3 percent of the entire Superfund set-aside for technical assistance grants would be a figure commensurate with community needs.

My experience with the $50,000 grant, which is obviously more than many communities have and a boon to lots of poor people out there, is that before we get the $50,000 it is spent. Technical experts are very expensive.

Senator LAUTENBERG. You are not talking as a lawyer now. You are just talking as a citizen.

Ms. FERRIS. Talking as a citizen, sir.

The $50,000 is spent before we get it oftentimes. Technical experts who may do work for communities at lower rates are still expensive to employ, and when you consider the voluminous amounts of information that go into a cleanup record and need to be reviewed by that technical expert to provide some assistance to the community, we are talking about a lot of dollars, so clearly $50,000 is insufficient.

Senator LAUTENBERG. If we converted $50,000 to 3 percent, obviously that's about a million and a half dollars. Correct? That's approximately correct. So you start to get into a significant proportion of the expense at lower figures.

What would you do? Estimate what the cost might be and then use that 3 percent figure as a target?

Ms. FERRIS. I'm not actually certain that 3 percent is an apt figure for consideration. I simply raise that as a sum that is recurring in my discussions with activists.

I think what is most important is to examine some other areas that might yield some better information for us about the TAG grants.

For one thing, I think that monies applied or grants that are issued need to be tailored to the complexity of the cleanup of the site and the length of time that it is taking to accomplish a cleanup at a site.

TAG grants right now are spread over three years, and in all of our knowledge we know that it takes at least 10 years to get a Superfund site cleaned up. Based on the simplicity versus the complexity of involvement with getting that site cleaned up, some communities may need more funds than other communities, and perhaps it would be important to develop some kind of criteria based on a sliding scale for determining the amount of funds that communities would receive.

Senator LAUTENBERG. I would like the record to reflect that the chairman didn't shake his head yes when you said it would take at least 10 years to clean up the site. That may be the experience, but it is one I would sure like to change.

Mr. Clark, what do you think we might do legislatively or administratively to change the rules for the TAG program to make them more effective?

Dr. CLARK. I think EPA, of course, has tried to improve the program, and I think most of the horror stories we hear are of the situation before they made the improvement.

It is too early to tell how well their efforts have worked, but I give them credit. I think they are trying to improve this.

I think the major issue facing Congress at this point is the question of how big the grants should be and then whether there is some way of making it proportional to the need, particularly if you promote, as we are, more community involvement over a longer period. I think that argues for perhaps increasing the basic TAG grant, although we at this point don't have any specific recommendations.

I would like to say I think it is a wonderful program, and I certainly commend you for coming up with it. I think it really is a path breaker and is an example of what we should be doing in a number of programs.

Senator LAUTENBERG. It was a fairly new idea.

Dr. CLARK. Yes.

Senator LAUTENBERG. And it was seized upon by the people in the communities as very helpful for them to deal with their share of the equation. It is awfully tough when you don't know how complicated and what the risks might be. It is very hard if you don't have the kind of professional skills right there to say, "This is what might happen. This is an approach we might take."

Ms. White, what might you see for some legislative change that would improve the public participation program and this site recognition and cleanup program?

Ms. WHITE. I made a number of recommendations in my testimony, but I'm going to narrow it down to three that I think I would say would be the three most important.

The first one would be to better define the mandate of the program and define what participation means. I think if communities and EPA both had a better understanding of what the program actually means, what participation means, I think the program would run more smoothly.

Second, I think we need to define community acceptance as modifying criteria for the selection of a remedy. There is no definition anywhere, and that can lead to a disproportionate weight being given to community acceptance or not enough weight being given to community acceptance.

I'm going to give you a brief example of a site where there was a disproportionate amount of weight given to community acceptance where I think it did a disservice to the program. This is the C&D Superfund Site in Foster Township, Pennsylvania, where there is a group in charge of the TAG grant that also has toxic tort litigation against the PRP. The group involves nine members of a family.

After an enormous amount of harassment of EPA, including this family's tort lawyer harassing the project manager, the EPA reversed its own recommendation of an on-site remedy and required on off-site remedy. So EPA ignored good science in order to basically get the community off its back.

Now, the reverse can also be true. A community may be ignored.

But I think if there were some kind of measure to what community acceptance means, and State acceptance, as well—they were both elevated, as you know, in the 1990 NCP—then there would be a way to balance all of the nine-criteria.

Finally, I would recommend that, at a minimum, we consider legislation to create these regional community councils to assist communities with the TAG program.

Senator LAUTENBERG. I thank the three of you very much.

Ms. Ferris, you wanted to be out of here at 2:45, I heard. It wasn't intended, but it worked out very well.

Ms. FERRIS. Almost on the button. Thank you, Senator.

Senator LAUTENBERG. Thank you all for being here. We will, if we have any further questions, submit them to you and ask for a quick response.

I am grateful for your participation.

With that, this hearing is adjourned.

[Whereupon, at 2:47 p.m., the subcommittee adjourned, to reconvene at the call of the Chair.]

[Statements submitted for the record follow:]

PREPARED STATEMENT OF THOMAS C. JORLING, COMMISSIONER, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Good afternoon Senator Lautenberg and Members of the Subcommittee. My name is Thomas Jorling, and I am Commissioner of New York State's Department of Environmental Conservation. My agency is responsible for implementing New York's Inactive Hazardous Waste Site Remediation Program (State Superfund Program) and for carrying out the State Lead Function under Federal Superfund. I welcome the opportunity to be here today to share our insights on the Federal/State relationship in the Superfund Program and, more specifically, to share our thoughts on improving the role of the States in Superfund through delegation.

NEW YORK'S SITE REMEDIATION PROGRAM

Before I begin my discussion of our partnership with EPA and recommendations for increasing the role of States in the Federal Superfund Program, I would like to briefly describe New York State's Superfund Program.

New York State's remedial program has evolved under Governor Cuomo's leadership from a program of crisis response to one of the largest, most aggressive and well-developed remedial programs in the country. Launched in 1978 to deal with the emergency at love canal, the program has matured into a statewide effort to clean up more than an anticipated 760 sites found to be threatening public health and the environment.

In 1986, Governor Cuomo proposed and the New York State legislature and the citizens of New York State made a major commitment to the remedial program with the passage of the 1986 Environmental Quality Bond Act. This law created a $1.2 billion bonding capability targeted to fund the State's share of the cost to clean up hundreds of sites by the year 2000.

With an experienced and dedicated staff. Of more than 400 engineers, geologists, attorneys and administrative personnel, we have made significant progress towards the goal of cleaning up 760 sites in New York State. The staff is able to provide hands-on involvement in these cleanups since they are assigned all over New York State in any one of DEC's nine regions. To date, 142 of these sites have been cleaned up; another 425 sites have remedial action or enforcement under way. Another indicator of the success of New York's program is that almost 70% of the sites identified as needing cleanup are being addressed by responsible parties. In comparison, the NPL lists 83 sites in New York. EPA has 96 staff assigned to these SITES. With a slightly greater ratio of staff to sites, EPA has completed remediation at 6 NPL sites (more are anticipated in the near future), whereas, over a comparable time period, New York has remediated 142 sites (although not all these cleanups were as complex as those for our worst sites).

EPA/DEC PARTNERSHIP

New York's history in addressing hazardous waste sites began in 1976 with the discovery of over 22,000 tons of various chemical wastes at the infamous love canal site. By 1978, love canal was declared an emergency area by State and Federal Governments. Both New York State and the United States Environmental Protection Agency stepped forward to assume responsibility for the investigation and remediation of the site. In 1982, the NYSDEC and the USEPA entered into a cooperative agreement which is still in effect today. Over $100 million in State and Federal Funds have been spent for capping the landfill, treating contaminants removed from the groundwater leachate collection system, adjacent sewers and creeks and relocating area residents. Both the State and Federal Governments can take great pride in completing what has been a long and complex project. With no previous experience to guide them and under intense scrutiny, professionalism, commitment and steadfastness prevailed. The site is now isolated from the environment and no threat to health or safety exists.

Today DEC works closely with EPA at National Priorities List (NPL) sites throughout all phases of the remedial process. As of April 1, 1993, 83 New York State sites were listed on the NPL. EPA is the primary funding source at 31 of these sites; responsible parties at 42 sites; and New York's Superfund at 9 municipal sites and one industrial site, the seal and restoration site which I will discuss in a few moments. Six of these NPL sites have been remediated and require continued management. To date, New York has received over $335 million in Federal Superfund monies to address remediation on NPL sites.

A particularly noteworthy component of Federal Superfund that is functioning well in New York is EPA's removal program. Under this program EPA responds to emergency situations in order to stabilize or clean up a hazardous incident that threatens acute human health or environmental damage. For example, at the Lehigh Valley Railroad Derailment Site in Genesee County, EPA recently completed installation of activated carbon treatment systems on 34 private wells that had been contaminated with TCE (trichloroethene) at an estimated cost of $478,000. At the Port Refinery Site in Rye Brook, Westchester County, EPA is currently removing soil contaminated with mercury from the properties adjacent to the site. A total of $3.3 million of Federal Superfund dollars have been obligated for this action.

New York's Superfund law is intended to address sites where hazardous wastes were disposed, while CERCLA is intended to address releases of hazardous substances from sites. Because the definition of hazardous waste is more restricted in New York's Superfund law than under CERCLA's hazardous substance definition, some sites in New York State can only be addressed under the Federal program. For example, the Forest Glen Subdivision in Niagara County and the Radium Chemical Site in New York City contain hazardous substances not included under New York's definition of hazardous wastes and therefore, these sites fall outside New York's Superfund authority. New York was very fortunate these sites could be addressed rapidly and efficiently under the Federal remedial program. Generally, EPA staff coordinate closely with New York State officials on remedial actions. We have found EPA to be very responsive to New York's requests for emergency assistance. This program—often overlooked—is one of the great success stories of Superfund.

PROBLEMS WITH FEDERAL SUPERFUND PROGRAM

Mr. Chairman, before I specifically address the issue of delegation, I would like to discuss a couple of areas where New York's experience indicates the need for change. One obstacle facing States which perform cleanups concerns implementation of remedial measures which require permits under Federal statutes, particularly the Toxic Substances Control Act. When an EPA-sponsored cleanup is proceeding at an NPL site under CERCLA, EPA has the flexibility to waive the procedural requirements for all Federal, State, or local permits for on-site activities. Section 121 of CERCLA should be amended to clarify that states may use this same waiver authority at non-NPL sites (and at NPL sites for which States assume the lead if a delegation program is implemented). The mechanism for ensuring proper exercise of this authority currently exists in those programs where EPA exercises oversight through a delegation component. For the Toxic Substances and Control Act which is not delegable to the States, such an oversight mechanism could be created.

One of the legitimate complaints against the Federal Superfund Program is its slow pace in cleaning up inactive hazardous waste sites. Given that there are currently 1,236 sites on the National Priorities List and there are over 37,800 potentially hazardous sites listed on EPA's CERCLIS (Comprehensive Environmental Re-

sponse, Compensation and Liability Information System) list, we must begin to adopt mechanisms for speeding up the rate of site evaluations and cleanups. One way to enable quicker cleanups would be to facilitate EPA's delegation of the Superfund Program and provide funding support to states with established programs of their own and with the demonstrated capacity to operate them in a manner to meet Federal remediation and enforcement standards. Such delegation should be structured to minimize the jurisdictional, structural and functional overlap between EPA and the delegated State agency. In New York, EPA and DEC generally work well together but some problems have occurred. These could be minimized under a delegated program.

One problem area of the Federal/State relationship which delegation would correct is the unnecessary delay and duplication of effort which occurs when a State and EPA separately conduct a remedial response at a site. At the Sealand Restoration Site in Lisbon, New York, DEC conducted a Remedial Investigation/Feasibility Study (RI/FS) and completed a major drum removal and off-site treatment program prior to the site being listed on the NPL after EPA listed the site on the NPL, it began a supplemental RI/FS to determine whether residual contamination was causing a significant threat even though New York's post-remediation report had concluded that this was not the case. EPA's consultant reached the same findings as DEC but is electing to continue monitoring the site. The expected RI/FS completion date is November 1994, over 4 years after New York completed its remediation.

We wish to recommend improvements that would enable States to more efficiently achieve remediation of not only NPL sites but non-NPL sites as well, and would help resolve difficulties caused by overlapping jurisdiction between EPA and the State. These improvements could be achieved through administrative or legislative adjustments.

New York together with eight other States has contended in a case before the United States Court of Appeals, District of Columbia, that EPA is not implementing the delegation scheme that is already authorized in CERCLA Section 104. Through an administrative adjustment EPA could delegate to States both the authority to issue administrative injunctive-type orders (or alternatively, to sue in Federal Court to obtain injunctive relief) and the authority to sue in Federal Court to recover treble damages in the event of noncompliance with such an order. States are already authorized by CERCLA Section 107(a) to sue in Federal Court to recover response cost expenditures.

I am glad to say that the States' position has been partially supported by the Court of Appeals in a decision handed down only last week. The court remanded the regulation in question to EPA for reconsideration, but stated that EPA could probably advance acceptable reasons to refuse to implement the delegation scheme as authorized by Congress.

The very fact that certain States, New York among them, were forced to seek judicial review of the present EPA regulation to compel implementation of that scheme, demonstrates the desirability of congressional action to express more clearly its intention. This decision will probably result in a proposal by EPA to revise the regulation to justify its refusal to implement delegation. Congress could effect much of what New York and other States seek by simply requiring—through statute—that EPA implement the delegation provision which exists in current law.

Full delegation of EPA's Superfund Program to States would substantially augment New York's funding and enforcement capabilities to remediate hazardous waste sites. Such delegation, however, should be based on the competence and accountability of the State but it should not be fettered by unreasonable, overburdening Federal oversight requirements. There must be respect for the competence of the two governments. Differences on specific sites must also be expected. Such differences should not lead to protracted professional wrestling matches that delay forward progress and increase costs. What follows are my thoughts on how we should structure the mechanism for delegating to states the authority to manage remediation of NPL sites.

A PROPOSED MODEL FOR STATE DELEGATION

EPA should have the flexibility to fully or partially delegate authority to States according to their respective capabilities. Full delegation should be granted to States such as New York with mature remedial programs. Partial delegation to implement various components of the remedial process such as site investigation, preparation of rods, and negotiating consent orders with responsible parties, should be made as appropriate to States which have not fully developed all portions of their programs. In States where no site remediation program exists, EPA should retain full author-

ity to manage NPL cleanups. This would lead to much more efficient uses of the financial and personnel resources of the governments.

Using criteria prescribed by RPA, States should be granted the responsibility to self-certify their capacity to manage NPL site remediations. Evaluation criteria should include:

- Demonstrated capacity to assure completion of the entire remedial process at a site from preliminary investigation through remedial construction and operation and maintenance;
- Established remedy selection process and experience in rod preparation;
- Adequate legal authority and a successful enforcement track record;
- Established citizen participation program;
- Established state funding authority and resources to meet the 10% state match requirement for remedial construction at NPL sites;
- Staff with experience in managing contractors, administrative oversight and technical oversight; and
- Established program planning, evaluation and reporting capabilities.

With regard to a funding scheme, I recommend that adequate Federal funding be made available to States for program development and refinement through core grants. Federal funding should fully cover state staff costs for NPL site work and partially fund staff costs for non-NPL site work. Better use of interpersonnel transfers between the Federal and State Governments would markedly improve use of public resources.

States should have access to Federal Superfund to remediate NPL sites only. EPA should retain the 90/10 cost sharing formula for capital costs plus operation and maintenance costs at NPL sites. A cooperative agreement should be established between EPA and a State which authorizes use of Federal funds to meet capital costs for remediating NPL sites. Each year a State would submit to EPA its work plan delineating proposed remedial activity at various sites and associated costs. EPA and the State would then negotiate a set of deliverables. The planned outputs would be used at year's end to measure a State's performance and would control continuation of delegated status as well as access to additional Federal funding support for the next fiscal year. The States have shown responsibility in the past to manage large sums of Federal resources. The Federal Assistance Program for construction of wastewater treatment systems is a prime example.

Lastly, regarding the Federal role in a State Delegated Program, EPA should perform a monitoring and auditing function. This should involve evaluation of whether or not deliverables have been met and if not, appropriate adjustments should be made to subsequent grants. EPA should review rods periodically in an effort to promote nationwide consistency of site remediation efforts. It should continue its efforts to develop a reasonably flexible, yet consistent approach to selecting cleanup goals. EPA should be responsible for maintaining the National Priorities List. EPA should also continue collecting fees and managing the Hazardous Substance Response Trust Fund (Superfund). It should sponsor research for developing, testing and certifying innovative technologies. And finally, EPA should continue implementing its emergency removal program.

This concludes my testimony and I welcome any questions you may wish to ask. Thank you.

Testimony of Paul Didier, President, Association of State and Territorial Solid Waste Management Officials

Good morning. I am Paul Didier, Director of the Bureau of Solid and Hazardous Waste Management at the Wisconsin Department of Natural Resources. I am also the President of the Association of State and Territorial Solid Waste Management Officials (ASTSWMO) and am here today representing ASTSWMO. ASTSWMO is a non-profit association which represents the collective interests of waste program directors of the nation's States and Territories. Besides the State cleanup and remedial program managers, ASTSWMO's membership also includes the State regulatory program managers for solid waste, hazardous waste, underground storage tanks, and waste minimization and recycling programs. Our membership is drawn exclusively from State employees who deal daily with the many management and resource implications of the State waste management programs they direct. Working closely with the U.S. Environmental Protection Agency (U.S. EPA), we share the objectives of the Congress and the public in providing for safe, effective and timely investigation and cleanup of the many contaminated sites throughout the nation. ASTSWMO has a fundamental interest in the dialogue surrounding the issue of the

appropriate State role in Superfund and we believe we can offer a unique perspective to this debate. We thank the Committee for acknowledging and addressing this important feature of Superfund Reauthorization.

BACKGROUND

It is our understanding that, when Congress enacted the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) in 1980, commonly known as Superfund, it was envisioned that there were approximately 400 serious abandoned waste sites requiring remediation and that Superfund would have a lifespan of perhaps five years. Thirteen years later, the National Priorities List (NPL) contains approximately 1,270 sites and the total universe of contaminated sites requiring cleanup across the nation is widely estimated to be in the tens of thousands. Yet, U.S. EPA estimates in its "Getting to Cleanup Initiative" that it will complete construction at one NPL site a week - 650 sites by the year 2000. From our perspective, we believe the universe of contaminated sites is much larger than originally envisioned and, as currently structured, the federal Superfund program will not address even the existing NPL sites in a timely manner, much less meet broader demands as more sites are added to the NPL.

In 1980, there were not many of us who thought that States would need to play a substantial role in the cleanup of the four hundred NPL sites, and States were just beginning to evaluate the need to develop their own cleanup programs. However, as of 1990, forty-one States have adopted a State Superfund law based on some form of liability, and forty-four States have developed funding authorities—two essential components to implementing an effective State cleanup program. States now are responsible for enforcing or funding cleanups at their own State non-NPL sites, and at NPL sites where their responsibility ranges from required cost sharing to lead agency for site activities. We believe States now remediate the vast majority of the confirmed contaminated sites in this country and will continue to do so in the future. Unfortunately, the full extent of State capabilities, to date, has not been measured. ASTSWMO has recently sent a survey to the States to determine the scope of State hazardous waste cleanup activity at non-NPL sites exclusive of those sites being cleaned up under RCRA authorities. Officials in my own State of Wisconsin have cleaned up 227 sites working cooperatively with responsible parties and where necessary, using State funds. In Minnesota the number of completed sites is 93. We will provide the results of that study to the Subcommittee upon completion in order to provide a better perspective of the extent of State accomplishments, which we believe will support our assumptions on State effectiveness in achieving cleanups.

Few, however, would dispute that State cleanup capabilities have grown. Regrettably, the current federal Superfund process, as structured, does not recognize or utilize these State resources to the extent we believe possible. For example, most States are precluded from having significant influence over the listing process during site assessment. Yet, States are closer to the sites, more familiar with the site histories and geographical conditions and more aware of how the relative risk posed by any given site compares to that of other remediation sites (RCRA, LUST) located in the State. Unfortunately, this has sometimes caused intergovernmental conflicts resulting in time delays, frustration and increased costs. Officials in my State (Wisconsin) for example, have expended resources to nominate approximately 12 sites for the NPL that U.S. EPA has not yet acted on.

During the Remedial process the State/Federal relationship tends to overlap rather than complement. For example, U.S. EPA has refused to grant authority to States to select cleanup remedies enforceable under CERCLA even when States are designated by U.S. EPA as the lead agency. Therefore, States are required to proceed solely under State cleanup laws with the knowledge that U.S. EPA subsequently may decide to select and enforce its own remedy if not satisfied with a State-selected remedy. The overall result is wasteful duplication of effort by U.S. EPA and State agencies overseeing and enforcing cleanup on the same sites, lengthy disputes between U.S. EPA and State agencies about the cleanup remedy and cleanup standards required for those sites, and a slower more expensive and more cumbersome cleanup process. As a result, we believe efficiency and consistency are not being achieved in the remedies selected across the country, and the maximum number of sites are not being addressed.

RECOMMENDED STATE ROLE

Superfund is the only major environmental program which is not delegated and implemented by the States. The Resource Conservation and Recovery Act's hazard-

ous waste and underground storage tanks programs, the Clean Water Act, the Clean Air Act and the Safe Drinking Water Act are all delegated in various forms to the States. We believe a form of delegation available to States under Superfund would increase the 'capacity for site cleanup by maximizing the effectiveness of limited federal and State resources, minimize disruptive intergovernmental conflicts, provide greater certainty and finality in enforcement actions, allow for greater flexibility and innovation, and increase the likelihood that more sites will be returned to productive use.

ASTSWMO is currently exploring several alternatives for increasing the State role. I would like to briefly discuss ASTSWMO's current thinking about how a delegated Superfund program might function. I must note that the ideas I am about to present are evolving and cannot be considered to represent a consensus of State views at this point. In fact, some States have expressed specific reservations over some of the concepts I will present here. We would rather have completed our work on these ideas before presentation, but in order to be responsive to the Congress's schedule, we are providing our ideas in this preliminary form.

I believe I can best describe our evolving views by describing them in terms of the five primary outcomes we would like to see in the reauthorization of CERCLA as it regards the State role. The five areas I shall address are 1) the scope; 2) the State role; 3) the funding mechanism; 4) Strict, Joint and Several Liability and 5) the U.S. EPA role.

1. First, we believe that CERCLA should be modified to reflect the full range of the national cleanup needs, to include all sites which require cleanup. This recognition of the full range of the problem cannot ignore the present NPL completion obligations, nor the finite limitations of the current trust fund, but would reflect the need to delegate some of the authorities and enforcement tools of the national Superfund program to willing-and able States. In short, CERCLA goes beyond the NPL in requiring government action to remediate hazardous releases, and the States should be provided similar authorities to those now provided to the Federal government for remediation of sites whether listed on the NPL or not.

In order to achieve this result, we are considering the concept of the development of a "registry" of sites exclusive of RCRA authorities requiring cleanup under CERCLA authority. Superfund has the ability to *potentially* affect all of the contaminated sites in the country but does not provide the mechanism to allow all sites (i.e. those which do not score above 28.5 in the Superfund site scoring system) to reach cleanup under the Federal program. Under such a program, U.S. EPA could be required to solicit from each State a list of sites that fall under Superfund authority. This list would represent all the sites in the nation needing cleanup under Superfund authority based on a standardized assessment process (not including potentially or suspected contaminated sites such as many CERCLIS listings) and would clearly subject all releases to CERCLA liability and enforcement actions. This national registry would replace CERCLIS.

From each State's list of sites, a subset of sites requiring public funding would be developed. After exhausting enforcement efforts, sites would go through a' qualification process for public funding after the State or U.S. EPA determined that no PRPs or other parties were willing or able to pay for or conduct cleanup. This qualification process would consider the severity of the contamination in relation to the other sites requiring public funding. Through this process a "true priority list" of sites that require public financing for cleanup would be developed.

This approach of a single registry would redirect site assessment data collection requirements essentially from the question of "which" sites to clean up to simply "when" to remediate any site determined to need cleanup. Cleanup officials would not at this point be determining funding decisions, but rather verifying that the sites actually require cleanup. This approach would give States a larger role in identifying sites for cleanup, thus exploiting the States' existing knowledge of contaminated sites within their borders as well as their rapidly evolving cleanup capabilities.

2. Second, we are strongly committed to an expanded State role, by which capable States may voluntarily seek the authority to fully implement significant elements of the Superfund program within their own State. State programs are prepared to be fully accountable for the use of public resources, and for the effectiveness of their cleanups, but should be given wide flexibility in the ways in which they carry out their responsibilities. Consistency is important, but this is not a preventative regulatory program, and site cleanups require a broad range of management decisions to reach necessary results. Therefore we are exploring the following options for how a delegated program, one which is strongly predicated on the development of clear cleanup goals and standards, would function.

A. *QUALIFYING CRITERIA*: Congress would direct U.S. EPA to work jointly with the States to develop qualifying criteria for delegation of the program to requesting States.

B. *DETERMINATION OF STATE QUALIFICATION*: Determination of State-Qualification would be made on a performance basis (i.e. self-certification) as is done with the Underground Storage Tanks program rather than on a process basis. This will enhance the likelihood and availability of State innovation and improvement, thereby helping to ensure the desired end result—namely the greatest possible number of timely and protective site cleanups given the available resources.

C. *PARTIAL DELEGATION*: Delegation should be strictly voluntary and all States should have the opportunity to qualify for either full or partial delegation. A logical approach for partial delegation would be to divide the cleanup program into three primary components (i.e. a "menu" approach): 1) the site identification and decision on cleanup part of the program; 2) the actual cleanup program with sub-headings of enforcement or RP lead remediations and publicly funded remediations; and 3) the removal program with sub-headings of time critical and non-time critical removals. Each aspect of the program could be delegated individually with the appropriate accompanying enforcement authorities and funding. Delegation of parts of the program would still provide an overall reduction in time and costs. Some sort of contract or revision cycle would be established in order for U.S. EPA to retain staff or contractors to perform those aspects of the program which particular States choose not to perform.

D. *FUNDING*: A very cost-effective and cost efficient means of funding States with delegated programs would involve the use of two-year program grants. The program-grant funding method that the U.S. EPA is using for the Underground Storage Tanks program has worked very well from both the State and Federal perspectives. A program grant should be equally as effective in the Superfund program as in the LUST program, as the large number of sites on a national Superfund registry would still be less than the current number of LUST sites. The program grant could cover items such as part of the State costs for administering the program, performing site assessment work (i.e, site identification and decision on the need to cleanup), enforcement activities, and/or emergency type activities. We believe State programs could perform the work for less cost than the for-profit Federal contractors and so reduce total costs.

3. Third, we believe that there must be a careful reevaluation of how Federal funds are utilized for publicly financed cleanups and how cost sharing requirements, and/or cut-offs for the federal funds, impact State cleanup funds. These government funding bases must be harmonized to ensure fair and appropriate division of responsibilities. I must add that, as program managers our experience and expertise is in using these funds, and not in the manner in which they are best collected. This is an area where our Governors and State legislators can provide better input than we can, and I don't expect that our Association will go much beyond these conceptual statements.

4. Fourth, we remain strongly committed to the central principle of strict, joint and several liability, recognizing that in some areas regulators need greater flexibility in assigning costs, for example in some situations involving local governments and innocent landowners.

5. Lastly, we believe that U.S. EPA's role needs to be clearly defined and restricted to those defined functions in situations where States have assumed cleanup responsibilities. We would offer the following as initial thoughts on an appropriate U.S. EPA role in a delegated Superfund. U.S. EPA's role in a delegated Superfund program would first and foremost be to ensure the proper implementation of the program throughout the nation. As I suggested earlier, U.S. EPA could be responsible for maintaining a national list of sites or registry, exclusive of RCRA, requiring cleanup and a prioritized sub-list of those sites requiring public fund financing for remedial action. U.S. EPA would be responsible for monitoring/auditing State programs; establishing minimum program requirements for delegation in conjunction with State regulatory representatives and other stakeholders; implementing all or parts of the program in States electing not to request delegation, or which lack the necessary capabilities; providing technical assistance and training; establishing national guidance and policy; conducting research and advancing cleanup technology and innovations; administering the multi-year grant funding for site remediation and State implementation programs; communicating national accomplishments; and fostering the overall development of State capabilities. In particular, U.S. EPA should focus efforts on establishing national cleanup approaches, standards, and/or methodologies to ensure cleanup decision consistency.

CONCLUSION

The reauthorized Superfund program should provide a system under which all of the sites subject to the jurisdiction of Superfund can be eligible for remediation. The reauthorized Superfund program should also seek to effectively utilize the resources of both the Federal and State agencies in an effort to clean up the largest number of sites possible. STSWMO will continue to research options for the effective use of State resources and plans to have a final proposal completed by the Fall of this year. Clearly, there are many unanswered questions concerning implementation, and important features such as public participation and the transition process from the current program which still must be addressed. In the meantime, the Association would be happy to continue to work with your Subcommittee staff. I would be glad to answer any questions you may have. Thank you.

Association of State and Territorial
ASTSWMO
Solid Waste Management Officials

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September 3, 1993

The Honorable Frank R. Lautenberg, Chairman
Subcommittee on Superfund, Recycling
and Solid Waste Management
Senate Environment and Public Works Committee
Washington, D.C. 20510-6175

Dear Mr. Chairman:

The purpose of this letter is to respond to your letter of August 3, 1993. The Association of State and Territorial Solid Waste Management Officials (ASTSWMO) is submitting our written responses to your questions for the record.

We appreciated the opportunity that these questions provided to further comment on delegation issues associated with the Superfund program. Thank you again for recognizing the importance of the issue associated with the State role in Superfund.

Sincerely,

Paul P. Didier

Paul P. Didier, P.E.
ASTSWMO President

Q.1 HOW MUCH MONEY WILL IT TAKE TO MAKE STATE DELEGATED PROGRAMS WORK?

A. The options ASTSWMO is exploring for a State delegated Superfund program are all based on the premise of having no significant expansion in cost of the current Superfund program. Rather they are based on the concept of utilizing the existing Superfund trust money and applying it to more sites through a streamlined Superfund program implemented by the States. One method for streamlining the program would be the development of clear cleanup standards. We, however, are not in a position as State program managers to predict and/or estimate the total expenditures of the national Superfund program.

Q.2 DO YOU BELIEVE IT WOULD BE COST-EFFECTIVE TO DELEGATE THE SUPERFUND PROGRAM TO QUALIFIED STATES?

A. Yes, for three key reasons. One, States for the most part, do not rely as heavily on the services of contractors as their federal counterparts—thereby the same work is performed for less cost. Two, States generally use a streamlined process and consequently are often able to perform the same work in less time, thereby decreasing costs. For example, the State of New Jersey estimates approximately 90 hours for conducting a Preliminary Assessment (PA) and 120 hours for conducting a Site Inspection (SI). U.S. EPA allocates 120 hours for a PA and 400 hours for a SI. Lastly, States are usually geographically closer to the sites. EPA has ten regional offices, located in ten States. The remaining forty States are, for the most part, able to reach the site locations in less time and for less cost.

Q.3 COULD YOU EXPLAIN HOW DELEGATION WILL ACTUALLY SAVE MONEY OVERALL? ARE STATE CONTRACTORS LESS EXPENSIVE THEN FEDERAL ONES?

A. While it is difficult to compare the rate of federal vs. State contractors directly, there are several ways to measure or compare. One such way is to consider that the State contracting procedures are not as cumbersome or lengthy as the federal process, thereby saving both time and expense in preparing and obtaining bids. This may well be reflected in a firm's overhead expenses. Time saved in obtaining bids for projects also speeds up cleanup, thereby further reducing costs. Another such measure is to look at similar projects, with similar remedies and scale. One such example might be the cost of capping two Wisconsin landfills, somewhat similar in size, such as the federal-lead Onalaska site (7 acres, 2.3. million, with 1 million in oversight costs) and the State-lead Sauk County site (14 acres, approximately 1.7 in capital cost, estimated).

The use of "local" contractors also reduces cost through lower mobilization costs. Local contractors also tend to know State requirements better, thereby saving costs for work done improperly.

Q.4 HOW DO STATES OVERSEE CONTRACTORS PERFORMING CLEANUP WORK?

A. Generally speaking, all State programs have guidances and regulations in place which are adhered to when procuring and reviewing contractor work. Specifically, in Wisconsin we make use of our decentralized field staff. By locating personnel closer to sites, it allows them to know what is going on at a site faster and better. This allows them in turn to be more responsive to needs of the site, and to the community and its concerns regarding a site. We consider the public relations aspect performed by our project managers to be key in obtaining appropriate cleanups, with minimal disruption to those affected.

In addition, we have established procurement procedures and tracking requirements. Project managers generally review work plans, plan specifications, reports and studies. For example, in Wisconsin our project managers carefully scrutinize contractor proposals, the work they do, and the charges they make, to ensure we are getting what we pay for. Project managers also provide field oversight, as time allows, generally for key decision points. Review of as-builts, and certification by the contractor that construction was according to plans provides additional assurance. By using decentralized staff, decisions can also be made quickly by the person best equipped to make the decision. Project managers have the authority for cost containment and can expend contingency funds if they feel it is in the best interest of the site.

Q.5 HOW WOULD YOU PROPOSE TO ENSURE ACCOUNTABILITY TO THE FEDERAL GOVERNMENT FOR TAXPAYERS' MONEY HANDED OUT TO STATES THROUGH DELEGATION OF THE SUPERFUND PROGRAM?

A. States expect and actually desire to be held accountable for the federal money which they spend. Any delegation model which is developed would have a built in system to ensure proper accountability. This may take the form of periodic audits of State programs and work, the development of annual State work plans, and/or the overall monitoring of State programs by the U.S. EPA. This would not be a difficult process to develop as States already make use of strict contract language, codified contracting requirements, audits, and tracking and accounting systems. A process could also be developed whereby interested stakeholders could request a U.S. EPA audit of a State's action on a particular site or program. It must be noted, however, that States, have always been held particularly accountable to the American taxpayer as they are closer and more accessible to the "working public".

Q.6 IN YOUR TESTIMONY, YOU SAY THAT PARTIAL DELEGATION OF THE SUPERFUND PROGRAM MAY BE AN OPTION. IF WE ARE TRYING TO ACHIEVE QUICKER, MORE EFFICIENT CLEANUPS, DOES IT MAKE SENSE TO HAVE PARTIAL DELEGATION AND LEAVE THE REST OF THE PROGRAM IN EPA'S HANDS? WON'T THAT LEAVE OVERLAPPING JURISDICTION AND LEAD TO DUPLICATION OF EFFORTS OR CONFLICTS OVER WHO SHOULD BE DOING WHAT?

A. ASTSWMO is currently exploring a partial delegation model which would be based on a menu approach. We currently believe the most logical approach for partial delegation would be to divide the cleanup program into three primary components: 1) the site identification and decision on cleanup part of the program; 2) the cleanup program with sub-headings of enforcement-lead sites and publicly funded sites; and 3) the removal program with subheadings of time-critical and non-time critical removals. States could implement the specific aspects of the program for which they are most capable and best suited thereby eliminating duplication of efforts in at least one portion of the program with the establishment of clear roles and responsibilities. In region V, for example, the pre-remedial program is essentially delegated to the States. This has resulted in 1) a more timely and efficient evaluation of sites; 2) priorities which better reflect the needs of both the State and Federal governments, as opposed to just the Federal government; and 3) a more efficient use of the limited funding.

Q.7 WHAT ARE THE THREE MAIN REASONS WHY DELEGATING THE SUPERFUND PROGRAM TO THE STATES WILL RESULT IN FASTER, PROTECTIVE CLEANUPS?

A. 1. State resources; 2. State knowledge and expertise; and 3. State availability and accountability to the community

Specifically, the current Superfund program does not make maximum use of both State and Federal resources. Basically the program is designed for Agencies to overlap rather than complement their resources i.e. lead/support system. States have developed their capabilities and increased their internal structures in order to address the remaining 36,000+ sites which do not score above 28.5. States are prepared to address large numbers of sites. EPA estimates that there are potentially another 3,600 sites which will score above 28.5 and be listed. In order to effectively address these sites, States resources must be used to their maximum advantage.

Second, due to the large number of sites which States currently address, there has been the opportunity for States to develop methods for streamlining the program and for developing expertise in a wide range of issues. States also have the added benefit of having not only scientific knowledge of the sites, but historical knowledge - due to their close proximity to the sites and the effected community. Historical information is an area currently not being used to its maximum potential by EPA.

Third, State managers often live in or near the communities which are effected by Superfund sites and therefore have a particularly strong interest in seeing these sites returned to productive use.

Q.8 YOU MENTION THAT CONGRESS SHOULD GIVE STATES AUTHORITIES SIMILAR TO THOSE EPA HAS, EVEN THOUGH YOU ALSO INDICATE OVER FORTY STATES HAVE ENFORCEMENT AND FUNDING AUTHORITIES IN PLACE. WHY DO THE STATES NEED MORE AUTHORITIES? WHY SHOULD CONGRESS DO THE WORK STATE LEGISLATURES ARE SUPPOSED TO DO?

A. Wisconsin, under its Environmental Repair statute, currently only has the authority to pursue owners and operators of contaminated sites, but not generators or transporters who may have contributed wastes to a site. Please note that Wisconsin's Environmental Repair law, because of its limited liability, is only used when addressing landfill contamination. Our State's Spill Law—similar to CERCLA—is used for all other contamination sites. I suspect you would find other States have similar variables in their cleanup authorities. To better implement a delegated Superfund program, Wisconsin would need expanded authority.

Q.9 HAS EPA EVER ACTUALLY STEPPED IN AFTER A STATE HAS COMPLETED A CLEANUP AND IMPOSED A DIFFERENT REMEDIAL ACTION? COULD YOU PROVIDE US WITH SOME ACTUAL EXAMPLES?

A. EPA has never stepped in after the State of Wisconsin has completed a cleanup and tried to impose a different remedial action. The fact that EPA has the authority to do this, however, has caused great fear among the Responsible Party community and consequently fosters a reluctance among RPs to sign agreements with the State.

Q.10 CAN YOU EXPLAIN THE POSITION TAKEN BY THE STATES IN THE NCP LITIGATION (STATE OF OHIO V. EPA) ON THE APPROPRIATE ROLE OF COST CONSIDERATIONS IN SCREENING AND SELECTING REMEDIES?

A. Neither the State of Wisconsin nor the Association of State and Territorial Solid Waste Management Officials (ASTSWMO) participated in the aforementioned NCP lawsuit. Therefore, I believe it would be more appropriate for the Subcommittee to direct this question to the nine litigating States.

Q.11 HOW WOULD YOU INTERPRET THE STATUTORY PREFERENCE FOR PERMANENT REMEDIES IN CERCLA SECTION 121? IN PARTICULAR, WHAT DO YOU THINK THE PHRASE "TO THE MAXIMUM EXTENT PRACTICABLE" MEANS? WHAT ROLE DO YOU SEE FOR INSTITUTIONAL AND ENGINEERING CONTROLS AT SUPERFUND SITES WHERE CLEANUP APPEARS TO BE VERY DIFFICULT AND EXPENSIVE AND WHERE EXPOSURE TO HUMANS APPEARS TO BE ONLY A REMOTE POSSIBILITY?

A. This issue embodies one of the fundamental problems facing the Superfund program today. The phrase "to the maximum extent practicable" can have various meanings to each individual who reads it. One can interpret the phrase to mean that if a cleanup is possible, irrespective of cost, then it should be conducted. Others could read the phrase and automatically incorporate cost into the concept of practicability. Additional legislative intent and/or clarification is needed in order for the regulatory agencies to effectively remediate the largest number of contaminated sites possible. The key factor which must be determined is, "when is it too expensive to conduct a permanent remedy at a contaminated site?" For your reference, New Jersey has just recently passed a law which expresses a preference for permanent remedies but also includes a cost differential which states that a non-permanent remedy will be implemented if it costs 50% less than the cost of a permanent remedy.

Q.12 DO YOU BELIEVE ALL GROUNDWATER RESOURCES SHOULD BE CLEANED UP TO DRINKING WATER STANDARDS? SHOULD MCLS OR MCLGS APPLY?

A. I believe the long term goal should be to return groundwater resources which are used or have the potential to be used as drinking water resources back to drinking water standards. State laws, where in place, allow for the degree of flexibility they believe necessary for their specific conditions. Some states have applied the concept of aquifer classification, while others have decided it best to protect all their aquifers to a similar level. In my view, drinking water quality, in concert with State requirements, should be the minimum acceptable level for cleanup of contamination. The MCLG should be the goal for cleanup, the MCL the minimum level of cleanup, and cleanup should go beyond the MCL, towards the MCLG, as best technology will allow. The goal of protection of human health and the environment should be considered in groundwater cleanups.

Q.13 HOW WOULD YOU TAKE CARE OF AQUIFERS THAT HAVE BEEN CONTAMINATED WITH DNAPLS?

A. In a case of Dense Non-Aqueous Phase Liquids (DNAPLs) contamination, it is necessary to perform three primary functions. First, restrict the use of the aqui-

fer where the actual source of contamination is present (within the aquifer) to prevent any future use that would withdraw contaminated water from the zone. Second, it is necessary to protect the down gradient receptors of the contamination that would migrate from the contaminant source. This can be done with a pump and treat system and an appropriate point down gradient of the source or if a potable water supply is in close proximity, providing treatment at the well head. Third, the source of the DNAPL contamination at the surface must be eliminated.

Q.14 COULD YOU EXPLAIN THE BENEFITS OF REQUIRING PERMITS AND OTHER PROCEDURAL STEPS WHEN CARRYING OUT A SUPERFUND CLEANUP? DO YOU BELIEVE THERE ARE WAYS TO ACHIEVE THE UNDERLYING PURPOSES AND OBJECTIVES OF ENVIRONMENTAL LAWS AND REGULATIONS WITHOUT NECESSARILY GOING THROUGH THE PAPERWORK AND RED TAPE SEPARATELY FOR EACH LAW?

A. A permit serves the purpose of ensuring regulatory oversight. In situations where regulatory oversight is already ensured, as in most Superfund sites via RODs, permits are not necessary for on-site action. I would like to emphasize that within State agencies we have immediate and direct access to our counterparts in other environmental media programs, and consequently, we can very effectively determine the special requirements for all media for inclusion in the remedial work plan. I believe this enhances the effectiveness and efficiency of State cleanups, while it reduces administrative demands.

Q.15 COULD WE SOLVE SOME OF THE PROBLEMS OF DUPLICATION OR OTHER ISSUES YOU HAVE RAISED WITHOUT ANY DELEGATION OF THE PROGRAM?

A. The problem of duplication can not be solved without some form of delegation or deferral of sites. EPA, however, could proceed at a faster rate through a streamlining of the program. For example, the development of national cleanup standards would greatly reduce conflicts between EPA and PRPs and EPA and State agencies. The recognition of States as full partners in the Superfund process would also help to avoid delays caused by intergovernmental conflicts, e.g. allowing State input and review of guidance documents should not invoke FACA requirements. State Agencies are regulators and should not be classified as "the general public".

Q.16 ONLY ABOUT A DOZEN STATES HAVE APPLIED FOR AND RECEIVED AUTHORIZATION TO CARRY OUT RCRA CORRECTIVE ACTION AUTHORITIES. IS THIS AN INDICATION OF HOW MANY STATES ARE READY TO TAKE OVER THE SUPERFUND PROGRAM?

A. I understand that currently, at least 15 States are authorized for RCRA Corrective Action. I do not believe this is a good indicator or should be used as an indicator of whether States are prepared to assume responsibility for the Superfund program. Most States have not sought authorization for the RCRA C program for the following reasons: 1) the requirements and procedures to receive authorization are extensive and for the most part inflexible. Additionally the final rule establishing the procedures for Corrective Action still is not published, so we are unsure of what our obligations will be; 2) the resources available for States to implement the program are limited; and 3) EPA retains a tight hold over the program and State activities allowing very little flexibility.

Q.17 YOU INDICATE THAT STATE QUALIFICATION SHOULD BE DONE ON A "PERFORMANCE BASIS" NOT A "PROCESS BASIS"—WHAT DOES THIS MEAN? HOW WILL YOUR PREFERRED APPROACH ENSURE ADEQUATE FEDERAL OVERSIGHT?

A. Performance basis indicates that qualification should be based on being able to achieve and or perform certain elements of a program. Qualification on a process basis indicates that a State must follow certain steps (as outlined) to reach an end goal. Due to the unique circumstances found in each State, State programs tend to have a very difficult time following prescribed program mandates. Flexibility is essential. The results produced by these programs should be the basis for qualification determinations.

Q.18 WHAT KIND OF DELEGATION PROCEDURE SHOULD BE USED FOR THE SUPERFUND PROGRAM? DOES CLEAN WATER ACT SECTION 402 PROVIDE A GOOD MODEL? DOES RCRA SECTION 3006?

A. ASTSWMO is not prepared at this time to endorse a specific delegation procedure. We do believe, however, that it would be appropriate for States, EPA and Congressional staff to meet to review the various delegation methods currently in existence and to determine if a new model may need to be developed. Our preliminary research does indicate that the RCRA Corrective Action authorization model does not appear to be an efficient means for delegating the Superfund program. Currently, the best working model may be the RCRA-LUST model of self-certification.

STATEMENT OF
DAVID L. MARKELL
ASSISTANT PROFESSOR, ALBANY LAW SCHOOL
BEFORE THE
SUBCOMMITTEE ON SUPERFUND, RECYCLING
AND SOLID WASTE MANAGEMENT
OF THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
U.S. SENATE

JULY 27, 1993

I. Introduction

Mr. Chairman and members of the Subcommittee: Thank you for the opportunity to appear today to discuss the appropriate role for states in the federal Superfund program. I recently completed a lengthy law review article that examines this issue in depth. As part of my research, I interviewed more than thirty individuals representing each of the major "stakeholders" in the Superfund process -- Congress, EPA Headquarters, EPA Regional Offices, the U.S. Department of Justice, state regulatory agencies, state attorneys' general, citizen groups, and responsible parties. In the remainder of my statement, I summarize my findings from the interviews and the other research I conducted.[1] In Section II, I identify several problem areas in the existing state/federal relationship, and I recommend various actions to address them. In Section III, I discuss several alternative models for structuring the state/federal relationship in the federal Superfund program.

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[1] I received financial support from Clean Sites, Inc. to conduct the interviews mentioned above and to prepare and present a paper based on these interviews at the March 1993, Conference on State Role in Superfund. I received financial support from Albany Law School in conducting other portions of my research and in preparing the above-referenced law review article.

Before beginning my discussion concerning the specific issue that is the subject of this proceeding -- what role should states play in the federal Superfund program -- I would like to share with you some good news. As part of the above-referenced interview process, I asked the interviewees for their perspectives on the overall record of the Superfund program. And while collectively the interviewees identified several concerns with the program (e.g., the need to reconsider CERCLA's approach to "how clean is clean"), the overall consensus, at least of the people actually doing the work in the program (i.e., the federal and state officials), was that the program has achieved significant successes in recent years. They discussed the large number of cleanups completed over the past few years, and the fact that responsible parties are conducting more than 70 percent of the cleanups. They also lauded the removal program as an unpublicized success. In short, the consensus view of both the federal and state government interviewees is that Superfund now is producing impressive results. I suspect that that message is different from that which you ordinarily hear. It was a different message than I expected to receive when I began the interview process last fall.

Now, to the issue that is the subject of this hearing -- the appropriate role for states in the federal Superfund program.

II. Apparent Problem Areas (And, Areas of Possible Improvement)

In the effort to understand the role states play in addressing the nation's hazardous waste site problem, and the role states should play, it is important to keep one's eye "on the ball" and be aware of two critical points. First, as several reviewers of the hazardous waste site problem in this country, including EPA, the General Accounting Office (GAO), and the Office of Technology Assessment (OTA), among others, have concluded, the size of the problem dwarfs the current size of the federal National Priorities List (NPL). As I point out in my forthcoming article, the existing framework for federal/state relations in the Superfund arena actually contains three elements. First, the federal Superfund program concentrates on a small subset of the total number of toxic waste sites throughout the United States that require investigation and potentially may require cleanup. Second, the federal government occupies the central role in addressing these sites, with states in a more or less active secondary role. And, third, by default, states are responsible for addressing the several thousand other sites that need attention. In evaluating the issue -- what role should the federal Superfund program provide for states -- it is important to keep the true scope of the hazardous waste site problem, and these three elements of the current framework for addressing the total universe of sites, in mind.

The second important factual backdrop is that, as EPA, the

GAO, and OTA also have concluded, the capabilities of the different states to address Superfund sites vary dramatically. These facts provide the context for the findings that follow.

Finding # 1: The Federal Government Should Structure the Federal Superfund Program to Maximize the Effectiveness of State Superfund Programs

Especially since the majority of hazardous waste sites are not on the NPL, the federal government should contribute to the effort to remediate these sites by modifying its Superfund program to enhance the strength of the state Superfund programs that have been created in part to address these sites. The federal government should explore at least the following two options to strengthen state efforts at non-NPL sites:

1. The federal government should maximize the states' ability to use the prospect of NPL listing as leverage to convince parties to clean up sites under state Superfund programs by allowing states to serve as the "gatekeepers" for the federal NPL -- i.e., the federal government should give states the right to concur in NPL listings. EPA reportedly has used the prospect of NPL listing to great advantage in inducing parties to conduct cleanups under RCRA. EPA requested comment in its 1988 proposed NCP on the issue of deferring sites to states, but it abandoned the idea in the face of the criticism its proposals received. Given the enormous number of

sites that need attention, it is unsound public policy to keep this issue of deferral on the "back burner."

While the concerns that the GAO and others raised relating to deferring sites to states are legitimate, when one views the problem in context -- from the perspective that there are many more sites that need attention than EPA can handle -- it is apparent that the federal government needs to act to strengthen state capability (as well as to allow and in fact encourage states to handle sites which they are interested in and capable of addressing). Maximizing states' ability to use the threat of NPL listing as leverage to induce parties to clean up sites under state Superfund programs (by giving states the right to concur in such listing) is one such action that the federal government should take. In doing so, it should address the concerns that the GAO (and others) have raised by including safeguards to ensure that, for example, only "capable" states are authorized to exercise such concurrence power, and that sites do not languish while under state control.

Furthermore, in crafting such safeguards, the federal government should maximize its use of "creative tools" such as public accountability, and minimize its use of the traditional approach of case-specific, resource-intensive oversight of state employees by their federal counterparts. Governments collectively need to improve in allocating the majority of their resources to

"field work," and in minimizing the percentage of their resources that are involved in "oversight" functions. Congress could make a contribution to good government that would transcend the Superfund program by developing more effective and more efficient ways for one governmental unit to monitor another's performance.

2. The federal government should establish the policy that the exemption from permitting in CERCLA section 121(e) applies to remedies that "capable" states select as well as remedies that EPA selects. Ordinarily, activities such as building a hazardous waste landfill require a permit. The purpose of such a permit requirement is two-fold. First, it ensures that an environmental regulatory agency has evaluated the proposed project and concluded that it meets legal requirements. Second, it establishes an opportunity for members of the public (including nearby residents) to participate in the decision concerning whether the project should proceed. Unfortunately, as some state officials told me during the interviews, and as Congress and EPA have recognized, the permit process sometimes delays site cleanups.

CERCLA substitutes its remedial process for this permit process, on the notion that the CERCLA process provides equivalent protection -- it enables the government to evaluate the proposed project, and it affords the public an opportunity to participate in the deliberations as well. To the extent that EPA limits the state-selected remedies to which this exemption from permitting

applies (and one EPA guidance document suggests that EPA may do so), the federal government should expand this exemption so that it applies to any state-approved remedial action, for states which EPA has determined are "capable" and which provide the public with an opportunity to participate in the process.

Finding # 2: The Federal Government Should "Leverage" its Own Resources By Expanding the States' Role in the Federal Superfund Program.

A variety of studies have found that state capabilities in the Superfund arena have grown over the past several years. The 1991 Update to EPA's 50-State Study found that states have a total of more than 3500 employees working on Superfund matters, approximately as many people as EPA has assigned to the program. The federal government should not only be facilitating the more productive use of these state personnel at non-NPL sites (by changing the federal program to strengthen state Superfund programs, as discussed above in Finding # 1), it also should be encouraging more extensive state participation in the federal Superfund program as well.

EPA's ultimate objective of maximizing the timely cleanup of sites should be reflected by a "bias" toward more completely integrating states into the federal Superfund program as equal partners. For example, EPA should be encouraging states to handle

entire sites on their own, from investigation through cleanup. Instead, with narrow exceptions, EPA has taken the policy position that only it can select remedies under CERCLA.[2] EPA should change its policy to allow states that are capable of and interested in handling entire sites (including remedy selection) to do so. In fact, given the enormous size of the universe of sites that may require attention, EPA's policy should be to encourage (not bar) such state involvement.

Because, as noted above, state capabilities to handle complex Superfund sites vary dramatically, the federal government needs to tailor its approach to more fully integrate states into the federal program accordingly. EPA should develop criteria for evaluating state capability and measure the programs of states interested in taking on additional responsibility at NPL sites against these criteria. As I discuss in more detail in my forthcoming article, EPA should consider at least the following criteria in developing its own list: (1) a proven track record in handling sites, 2) adequate legal authority, including adequate enforcement authority, 3) sufficient staffing, 4) adequate procedures for public involvement, and 5) adequate contracting authority and mechanisms -- several officials emphasized to me during the interviews that there is a need to "move" these sites and that states cannot be subject to significant delays due to procurement problems. Instead, states must have contractors on "standby" ready to

[2] See e.g., 55 Fed. Reg. 8783 (Mar. 8, 1990).

respond).

As part of its effort to more fully integrate states into the federal program, the federal government also should revisit its approach to oversight. Currently, with rare exceptions, the NCP requires EPA to "approve" draft and final remedy selection documents before states may issue them. The federal government should consider less resource-intensive forms of oversight, including that used under the Clean Water Act, in which the federal government has veto authority rather than approval authority (with, as one federal court put it, the federal government to exercise this veto power "judiciously").

Finding # 3: The Federal Government Should Take Several Steps to Minimize Duplication of Effort

As I conclude in my forthcoming article, "[t]he federal government should structure the federal Superfund program to avoid squandering the additional resources gained for the program through state involvement." Especially in light of the tremendous number of sites that may require cleanup, it is essential that the federal and state governments use their collective resources efficiently. Inefficiencies caused by the current federal/state relationship (particularly duplication of effort) appear to be among the biggest problems in federal/state relations. Some interviewees labelled it the "two cooks in the kitchen" syndrome.

The federal government should take several actions to reduce the amount of duplication of effort, including the following:

1. The federal government should create a new "bias" in favor of relatively independent handling of sites, instead of the current "joint venturing" of sites by both EPA and the relevant state. The current CERCLA scheme is inherently inefficient in that it provides that both EPA and the relevant state will be substantially involved in handling the same sites. This problem derives in part from the "lead agency/support agency" approach that is at the heart of the existing federal/state relationship under CERCLA. Under this approach, if EPA is in the "lead" for a site, a state is expected to be substantially and meaningfully involved as well. If a state is in the lead under a "cooperative agreement," EPA is mandated to maintain substantial involvement.

The federal government should shift from its current approach of encouraging (and in some cases, funding) active state participation in sites for which EPA is taking the lead, to encouraging states to use their resources (and federal resources) to handle sites independently. And, when states are capable of and interested in handling sites independently, EPA should reduce its level of oversight, as suggested above. The federal government needs to "let go," at least to some extent, of sites that a state is interested in and capable of handling, and instead use those resources for sites for which EPA has assumed the lead role.

2. The federal government also should change CERCLA's financial structure to "level out" the cost shares of the federal and state governments. The current cost share structure creates a built-in incentive for conflict between, and duplication of effort by, the federal and state governments. Levelling out the cost shares would eliminate this source of potential conflict and this built-in incentive for duplication of effort.

What does this mean? How does CERCLA's financial structure create different cost shares? According to EPA, CERCLA creates a different cost share for construction costs than it does for operation and maintenance (O & M) costs. EPA's interpretation is that under CERCLA (for sites that responsible parties are not remediating), 1) EPA pays 90 percent of construction costs, with states paying the remaining 10 percent, and 2) in contrast, for O & M, states bear the entire cost, with EPA having no cost share. While several states disagree with this interpretation, EPA currently follows it.[3]

This financial structure creates a strong potential incentive for conflict because it gives one government (the state) a financial incentive to push for a remedy that involves expensive construction and little O & M, while it gives the other (the federal government) the opposite financial incentive of pushing for

[3] This interpretation currently is under review in the NCP lawsuit pending before the United States Court of Appeals for the District of Columbia Circuit.

a remedy that involves minimal construction and extensive O & M. Because it creates this substantive potential for conflict, this structure also leads to wasteful duplication of effort. States have a strong financial incentive to participate actively in the cleanup process (even if EPA is participating actively as well) to produce a remedy that has high construction costs and low O & M costs. Further, states need to be involved at such sites to ensure that EPA's financial incentives -- which are the opposite of the states' -- do not drive EPA toward a remedy with low construction costs and high O & M costs. Similarly, even if EPA were willing to give a state the lead for a site (which, as noted above, I believe is a good idea in appropriate circumstances), with the existing cost structure EPA would need to be involved to ensure that the state acts in EPA's best interests despite the different financial incentives of the two governments. In sum, the federal government should create level cost shares throughout the process for both the federal and state governments to eliminate this potential source of conflict and duplication of effort.[4]

Recommendation # 4: The Federal Government Should Make the Following Miscellaneous Improvements to the Existing Structure

In addition to the changes suggested above, the federal government should consider refining the federal Superfund program

[4] What the cost share levels should be is a different question that warrants careful consideration, as I discuss in my forthcoming article.

in the following ways:

1. The federal government should revisit the U.S. Department of Justice's (DOJ's) role in the settlement process. Currently, CERCLA requires DOJ involvement in most settlements involving remedial actions. This is inherently inefficient. Under this structure, EPA and DOJ necessarily engage in redundant review of settlements. While it is important for courts to retain the authority to review the fairness of some settlements, Congress should use another mechanism to accomplish this result.

2. The federal government should revisit its approach to communications between EPA Headquarters and the Regions, and between EPA and the states. It was clear from the interviews that the current system of using "guidance" to communicate policy direction and the strategies for implementing policy warrants fundamental review. For a variety of reasons (the large number of guidance documents, their length, etc.), guidance currently apparently is of limited value to Regional and state personnel and its use similarly is limited.

3. I am not aware of a good reason for requiring a unique (50 percent) State cost share for Superfund municipal sites. More than one interviewee recommended that the federal government treat municipal sites like other sites in terms of the level of state cost share.

III. Alternative Models For the Federal/State Relationship

The federal government has the option of radically restructuring the federal/state relationship in the Superfund program. Among the alternative models are the following: 1) a "Delegation Model," structured along the lines of the Clean Water Act or RCRA, in which delegated states become the primary implementers of the program, with EPA performing an oversight and back up role; 2) a "Clean Break Model," which would be designed to improve efficiency by eliminating or greatly circumscribing the states' role in handling NPL sites (presumably, states' cost share and other responsibilities similarly would be eliminated or reduced); and 3) a "Comprehensive List Model," which would eliminate the concept of two lists of sites. Instead, it would involve the creation of a single, comprehensive list of sites and the division of responsibilities between the federal and state governments for these sites.

Because I believe that the "Delegation Model" is the alternative most likely to gain support and receive serious consideration, without reviewing the pros and cons of adopting such a framework, I have highlighted below some of the major issues that Congress should consider in evaluating this alternative:

1. The criteria for delegation (e.g., see the criteria I list at page 8);

2. The types of federal authorities (if any) that would be included as part of the delegation package (e.g., the ability to use CERCLA's enforcement authorities, or the ability to access the federal Superfund);

3. The type of delegation (e.g., options include authorization, in which a state adopts adequate state authority and then administers the program under this state law, and delegation, in which a state implements the federal law directly);

4. The process for delegation (e.g., a process in which a state self-certifies that it is qualified for delegation, or a process that allows for public input and EPA review);

5. The nature of EPA oversight (see page 9 for a discussion of one option regarding the nature of EPA oversight);

6. In addition to oversight, the other functions that the federal government should perform (e.g., research and development, information dissemination regarding new treatment technologies, and setting cleanup levels); and

7. Dealing with the transition (e.g., how do you minimize the disruption that delegation causes to the existing federal infrastructure?).

Conclusion

Congress will need to grapple with a number of significant issues as it proceeds through the CERCLA reauthorization process. One of these issues involves the role that states should play in

the Superfund program. I commend the Committee for holding a hearing on this issue, and hope that my comments will contribute to your efforts to address it.

Thank you.

ALBANY LAW SCHOOL

David L. Markell
ASSISTANT PROFESSOR OF LAW

August 25, 1993

Senator Frank R. Lautenberg
United States Senate
506 Hart Senate Office Building
Washington, DC. 20510-3002

Dear Senator Lautenberg:

Thank you for the opportunity to participate in the recent hearing on the state role in Superfund. I hope that my testimony proves helpful to the Subcommittee in its deliberations.

I provide below answers to the additional questions you forwarded to me with your letter dated August 3, 1993.

Question # 1: Has EPA ever withdrawn authorization for a State to carry out a delegated program?

Answer: I do not have specific information concerning whether EPA has ever withdrawn authorization for a state to carry out a delegated program. I recently read in the Environment Reporter (Aug. 13, 1993, at p. 634) that "[w]hile EPA has not yet rescinded primacy from any state, it has, for the first time, formally initiated withdrawal from three states." It was not clear from the article whether the statement that EPA "has not yet rescinded primacy from any state" applies only to the Safe Drinking Water Act (the subject of the article) or generally. I recently began a research project on state/federal relations in other environmental programs and hope to learn from this research the status of EPA efforts to withdraw delegation.

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I have a few additional, preliminary observations on this issue that may be of some assistance to you. First, my understanding is that, if EPA has withdrawn authorization for a State to carry out a delegated program, it has done so only extremely rarely. Second, I am aware of instances in which a court has determined that a state has failed to fulfill its obligations under a delegated program. In these instances, the court ordered EPA to fulfill these obligations (one example of this involves the Federal Implementation Plans that EPA has been ordered to prepare under the Clean Air Act). Third, I recently have read that a number of states are seriously considering returning delegated programs to EPA. In sum, it does not appear that EPA itself has withdrawn delegation on many occasions (if ever), but actions by other actors (courts and states) have produced at least a partial return of primary authority from a state to EPA on several occasions.

Question # 2: What tools can we create, short of the "nuclear bomb" of withdrawing delegation, to allow EPA to police the states' running of the program?

Answer: Several such tools potentially are available. First, the federal government should be confident that a state is "capable" of conducting the program before EPA delegates it. In a law review article that I recently completed, I list eight criteria that EPA should consider in determining whether a state is "capable." EPA should develop specific criteria for evaluating state capability and only delegate the program to states that meet these criteria.

Second, the federal government should be creative in developing oversight mechanisms. Instead of relying exclusively on a system that depends on resource-intensive, case-specific EPA oversight of state activities, the federal government should develop other strategies to ensure that states are accountable. For example, the federal government might consider developing a more streamlined oversight approach that uses programmatic objectives to measure performance (so that EPA does not rely solely on case-specific performance). Related, EPA could reward states financially that do a good job, and penalize states financially that do not do a good job. A third option is for the federal government to establish mechanisms of public accountability for state programs (borrowing creatively from the TRI program's approach which, through public dissemination of information, has caused many companies to reduce their emissions and discharges dramatically). A fourth option is to create a "middle level" sanction, between "letter writing and meetings" and "withdrawal." The concepts of financial sanctions and public accountability discussed above might be useful in this context as well. Finally, the federal government needs to maintain sufficient resources to be able not only to determine whether a state is fulfilling its responsibilities, but also to be able to determine quickly the causes of any problems and then develop appropriate fixes.

Question # 3: What problems do you see with the state proposals to delegate Superfund?

Answer: I have not seen a detailed proposal. Based on what I have seen, I can offer a few preliminary observations, as follows: 1) I agree that the federal government should recognize that the number of sites is much larger than the National Priorities List (NPL) and, therefore, the federal government should be encouraging a greater role for interested and capable states; 2) at least one proposal that I've seen suggests that development of clear cleanup goals and standards should be a condition for delegating the program. Development of such goals and standards is not imminent, so far as I am aware. Accordingly, I recommend a more flexible approach, in which, at a minimum, the changes to the state/federal relationship that I suggest in my testimony be made independent of developing such goals and standards; 3) any delegation to states needs to recognize that a) there is enormous variability in state capability (my sense is that many states are not equipped at this point to take over the federal Superfund program), and b) the federal bureaucracy appears to have produced significant numbers of responsible party-funded studies and cleanups in recent years and, thus, any delegation needs to be designed to ensure that it does not result in a fall off in results (some sort of accountability to ensure that results do not drop off should be considered as part of any delegation, and might serve as an effective tool to ensure that only capable states seek delegation); 4) Congress needs to think hard about the process for accomplishing delegation (e.g., what rights should the public have to provide input into the decision making process); and 5) Congress needs to think hard about the scope of delegation (e.g., a) would it include access to the federal Superfund, b) if so, under what conditions and with what type/level of oversight, c) would it include the right to invoke CERCLA's enforcement and other authorities and, d) again, if so, under what conditions). The above is only a partial summary of the issues that Congress needs to resolve in deciding whether to "delegate" the program and, if it adopts a delegation model, the shape of any such delegation. I discuss these issues more fully in my recent law review article.

Question # 4: What lessons can we learn from other federal environmental laws that have been delegated to the states? For example, what has been the record for taking enforcement actions for violations of Clean Water Act Section 402 permits issued by states?

Answer: This question is the subject of one of my current research projects. My answer to the second part of this question is that I do not know precisely how many enforcement actions EPA has taken in delegated states for violation of Clean Water Act permits.

My preliminary view is that at least two fundamental principles should guide EPA oversight of state performance. First, EPA needs to develop measures of performance. To the maximum extent possible, these measures of performance should relate to environmental conditions (e.g., the quality of the water). Further, to the maximum extent possible, these measures of performance should not be case-specific. Instead, they should be programmatic goals. One of the main inefficiencies in government in my view is that too many government resources are used to "oversee" other people's work. Heavy oversight adversely affects overall performance in numerous ways. Among others, it stifles initiative "in the trenches" and it takes resources away from doing direct work. In sum, in my view the federal government needs to revisit its approach to overseeing state performance. It needs to develop programmatically-based measures of performance, rather than rely as much as it does currently on case-specific reviews. Further, it needs to be creative in identifying and implementing oversight strategies that maximize the number of people in the field doing work.

Second, a fundamental EPA responsibility is to ensure a "level playing field" throughout the country. Following from this, EPA should exercise what might be called "differential oversight" -- that is, the level of oversight should depend on the performance of each state. If a state is doing very well based on the measures of performance, EPA should invest relatively few resources overseeing that state's performance. On the other hand, if a state is doing poorly, EPA should invest more resources overseeing (and helping to improve) the state's performance. It also potentially should invest federal resources to provide direct environmental regulation or enforcement in states that are not doing well themselves.

I hope that these answers to your additional questions prove helpful to you and other members of the Subcommittee in your deliberations.

Thank you.

Sincerely,

/s/

David L. Markell
Assistant Professor of Law

Testimony of Deeohn Ferris, Lawyers' Committee on Civil Rights

Mr. Chairman and Members of the Subcommittee, I appreciate the opportunity to appear before you today to examine environmental justice issues and the need to meaningfully involve communities in the Superfund [1] process.

The Lawyers' Committee for Civil Rights Under Law is a nonpartisan, non-profit organization formed in 1963 at the request of President John F. Kennedy to involve the private bar in the provision of legal services to victims of racial discrimination. The Lawyers' Committee implements its mission through legal representation, public policy advocacy and public education on civil rights matters. I am Program Director of the Lawyers' Committee's Environmental Justice Project, which focuses on developing interdisciplinary cooperation and strategies to prevent and remedy the disproportionate environmental risks experienced by people of color and the poor.

The goal of the Environmental Justice Project is to promote equal environmental protection and develop remedies for the adverse consequences of prior discrimination. Our objective is to obtain environmental equality by providing legal and technical resources to communities of color and the poor in their efforts to combat environmental discrimination and eliminate all barriers to equal environmental protection.

I. INTRODUCTION

Based on my work with communities who are at risk due to toxic exposures at Superfund sites, I will outline for you in my testimony suggested reforms to achieve public awareness and community involvement in the in. S. Environmental Protection Agency's (EPA) Superfund cleanup process.

As we approach the Superfund reauthorization effort, it is clear that few unequivocally applaud past Superfund performance. Collectively, communities, industry, and government [2] are critical about whether the Super fund program has actually achieved Congressional goals. Discontent and frustration is especially pronounced amongst the low-income communities and communities of color whom I represent. These communities, who are disproportionately exposed to environmental hazards across the board [3], have also been disproportionately affected—by Superfund's ineffectiveness.

For example, according to the widely acclaimed *National Law Journal* report, "Unequal Protection: The Racial Divide in Environmental Law," communities of color will wait up to four years more than white communities in getting a Superfund site cleaned up. [4] This disparate treatment by the government is especially alarming given the 1987 *Toxic Wastes and Race in the United States* report which found that, "Three out of every five Black and Hispanic Americans live in communities with uncontrolled toxic waste sites." [5]

Not only is Super fund disproportionately ineffective, but Superfund is also discriminatory implemented. For example, according to the *National Law Journal* report, permanent treatment remedies were selected 22 percent more frequently than containment technologies at sites surrounded by white communities. [6] In contrast, at sites surrounded by communities of color, containment technologies were selected more frequently than permanent treatment by an average of 7 percent. [7] As stated by Robert Bullard, a noted sociologist and researcher on environmental justice issues, "Not only are people of color differentially impacted by . . . pollution, they can expect different treatment by the government." [8]

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[1] Comprehensive Environmental Response, Compensation and Liability Act, as amended 42 U.S.C. § 9601 *et seq.* (CERCLA).

[2] See, e.g., *Superfund Administrative Improvements*, U.S. Environmental Protection Agency, Final Report, June 23, 1993.

[3] See e. g., *Environmental Racism: Reviewing the Evidence*, Paul Mohai and Bunyan Bryant (Paper delivered at the University of Michigan Law School Symposium on Race, Poverty, and the Environment, January 1992).

[4] *The National Law Journal*, Vol. 15, No. 3, September 21, 1992, Page S4.

[5] *Toxic Wastes and Race in the United States: A National Report on the Racial and Socio-Economic Characteristics of Communities with Hazardous Waste Sites*, Commission for Racial Justice, United Church of Christ, New York, New York, 1987.

[6] *The National Law Journal*, Vol. 15, No. 3, September 21, 1993.

[7] *Id.*

[8] *The Environmental Justice Framework: A Strategy for Addressing Unequal Protection*, Robert Bullard, Draft, Unpublished 1992.

Due to this deplorable record, environmental justice activists and communities whom I represent have galvanized to develop and advocate for a broad range of reforms to Superfund. Having experienced the most profound deficiencies of the Superfund implementation, communities of color and low-income communities are uniquely positioned to offer meaningful suggestions for improving the program. These suggested reforms touch every phase of the Superfund process, including assessment of health risk, allocation of liability, and determinations of remedial technologies. As a primary reform, environmental justice activists are demanding innovative programs that will constitute significant improvements in the role of local communities.

This testimony focuses on several specific reforms which will provide immediate relief to communities in distress and will respond to the need to increase public participation in the Superfund process. These specific reforms involve the following areas:

a. Native American Programs
b. Technical Assistance Grants
c. Community Working Groups
d. Health Assessments
e. Technologies Clearinghouse
f. Citizen Suits

II. CONGRESS MUST AMEND SUPERFUND TO PROVIDE A MEANINGFUL COMMUNITY ROLE IN THE CLEANUP PROCESS

Environmental justice activists demand that citizens must be both better informed and actively involved in the cleanup process and that government must be responsive to the concerns of those people in communities who surround Superfund sites. Recognizing the need for improved public involvement, EPA stated in a report as recent as last month that, "The EPA must increase its efforts to achieve earlier and more effective community involvement at each site." [9] The need for "earlier and more effective community involvement" [10] is of particular concern to communities of color and low-income communities that are historically the least involved and the least heeded in the government process.

However, instead of providing opportunities for substantial public participation, the current Superfund statute, as amended and reauthorized in the-1986 Super fund Amendments and Reauthorization Act (SARA) [11], provides for minimal public notice in the Superfund process. For example, a remedial action or cleanup plan for a site must be available for public comment, including provisions for adequate notice and a reasonable opportunity to respond. [12] EPA is also required by SARA to establish a publicly available administrative record upon which the government shall base its selection of a response action. [13] SARA also provides for technical assistance grants in order that those persons living near a National Priority List (NPL) site may, "obtain technical assistance in interpreting information . . ." concerning all aspects of the Super fund process. [14]

These sparse requirements are intended to improve public awareness *not* public participation. As such, these statutory requirements are inadequate. The victims of contamination at Superfund sites demand to be better informed *and* meaningfully involved in the process which is intended to protect their health. While the EPA has instituted a number of administrative mechanisms to improve public participation, these efforts are largely discretionary and largely intended as community relations efforts. [15]

A central concern of low-income communities and communities of color is governmental accountability for protecting public health and the environment. Where the Agency fails to adequately inform and involve the public, concerned citizens are often disconnected from the cleanup process and unable to act as a government

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[9] *Superfund Administrative Improvements*, U.S. Environmental Protection Agency, Final Report, June 23, 1993.

[10] *Id.*

[11] Pub.L. No. 99–499, 100 Stat. 1613 (1986) (amending CERCLA).

[12] CERCLA § 117, 42 U.S.C. § 9617(a)

[13] CERCLA § 113(k), 42 U.S.C. § 9613(k).

[14] CERCLA § 117(e)(1), 42 U.S.C. § 9617(e)(1). "Such grants may be used to obtain technical assistance in interpreting information with regard to the nature of the hazard, remedial investigation and feasibility study, record of decision, remedial design, selection and construction of remedial action, operation and maintenance, or removal action at such facility."

[15] See *Public Participation in the Superfund Process*, Ellison Folk, 18 ECOLOGY L.Q. 173 (1991).

watchdog. Therefore, only those communities which have greater access to political power and legal and technical resources are able to influence the Superfund decision-making process. As a result, an odious and discriminatory pattern has emerged where communities of color and low-income communities will wait up to four years longer than white communities to have a Superfund site cleaned-up. [16] Involving the public in the EPA decision-making process is essential to guarantee that EPA is accountable to all those whose health it is obligated by law to protect.

Public participation is *essential* because it ensures that EPA is accountable to those whose health it is obligated to protect, and it is desirable because it enhances the efficiency and effectiveness of the Superfund program. As EPA has recognized, "Effective community involvement will speed-up the Superfund process by involving the community early in the process and resolving possible conflicts." [17] By mandating that EPA listen to public concerns, Congress will: (1) improve the quality of EPA decisions; (2) accelerate the speed of the cleanup process; and (3) reduce the ultimate cost of the Superfund program.

The quality of EPA decision-making will be enhanced by mandatory public involvement as a result of the, "different perspectives that private citizens bring to cleanup efforts." [18] As a recent study by the Office of Technology Assessment found, EPA often fails to consider the use of alternative, but readily available technologies, which may provide for more permanent remediation. [19] With a constant infusion of ideas from the perspective of those whose health is immediately threatened, EPA will more likely consider innovative and permanent technologies. [20] This citizen perspective will provide an important balance to the close working relationship between EPA and potentially responsible parties (PRPs), which has caused many communities to claim that the current decision-making apparatus encourages the fox to guard the henhouse. [21]

Public participation will accelerate the pace of the Superfund cleanup process by promoting a consensus between EPA, PRPs, and community groups. This consensus model will enhance public support for the cleanup and thereby avoid future controversies. Public distrust of and discontent regarding a Superfund decision can add to the already lengthy time frames associated with cleanups while citizens pursue legal remedies and apply political pressures. Early public participation will avoid excessive delays caused by communities who are understandably suspicious about a closed decision-making process.

Finally, public participation will reduce the ultimate cost of the Superfund program by avoiding the need to revisit sites and implement permanent treatment technologies. The need to revisit an inadequately cleaned site is far more costly than an original cleanup which takes into account the local community's perspective regarding future use of the land.

A mandate which explicitly provides for public involvement throughout the entire Superfund process is necessary to ensure that the law will fulfill the promise of protecting all citizens equitably and expeditiously. This testimony outlines reforms in the six key areas which are necessary to statutorily secure a meaningful community role. These key areas include Native American programs, technical assistance grants, community working groups, health assessments, a technologies clearinghouse, and citizen suits.

A. NATIVE AMERICAN PROGRAMS

To facilitate sovereign governance and the ability of Native Americans to protect themselves and their sacred sites from pollution exposures, Congress must ensure

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[16] Supra, note 4.

[17] *Superfund Administrative Improvements*, U.S. Environmental Protection Agency, Final Report, June 23, 1993.

[18] Ellison Folk, "Public Participation in the Superfund Process," 18 ECOLOGY L.Q. 173 (1991).

[19] *Are We Cleaning Up?*, Office of Technology Assessment 3 (1988).

[20] "At a groundwater contamination site in California's San Fernando Valley, for example, members of the public expressed concern that the use of an aeration tower to strip pollutants from groundwater would contribute to the air pollution problem in Los Angeles. In response to this concern, EPA recommended that cleanup proceed through a combination of air stripping and carbon adsorption, which would reduce the impact on air quality. EPA had not originally planned to use the carbon adsorption system, but in the face of public opposition, the idea that EPA would contribute to the air quality problem in the Los Angeles air basin was considered politically unacceptable." Supra note 18, accompanying text of notes 81-83.

[21] "A Superfund Fable: The Fox, the Farmer, and the Henhouse," *The Chicago Environment: A Newsletter on Environmental Issues*, Vol. II, No. 2, Fall 1992, Page 1.

availability of adequate funding and training opportunities, as well as Tribal access to EPA Superfund program managers. Sovereign Tribal governments have not shared technical assistance and federal funding to develop environmental infrastructures at levels provided to the States. In view of these deficiencies, Tribal governments are unable to adequately implement the Superfund program. As Tom Goldtooth, the Environmental Director of the Red Lake Band of Chippewa Indians and National Council Officer of the Indigenous Environmental Network, has observed, "Without tribal environmental programs in place, the protection of our lands and people is jeopardized." [22] EPA must be compelled to adequately fund and work closely with Tribes to address the special cultural and jurisdictional issues encountered when cleaning a Superfund site affecting Tribal communities.

B. TECHNICAL ASSISTANCE GRANTS

Technical assistance grants (TAG) are intended to "help ensure that affected individuals are well informed about the conditions and activities at Superfund sites in their communities." [23] Despite explicit Congressional intent [24] to provide communities with the information necessary to understand the risks with which they live, the application process is an impediment to communities who seek the grants.

My own experience with assisting communities secure TAGs is revelatory. Law clerks in my office assigned to unravel the complex TAG application process often encounter confusion at EPA. Few staff at the Agency seem certain of the exact requirements that a community must fulfill in order to receive a grant. As we proceed through the grant process, it is clear that communities romotewithout professional assistance are disadvantaged, where they must interpret the application and federal requirements themselves.

The technical assistance grant process should be simplified and expedited and eligible expenditures should be broadened. Lack of awareness, application complexity, and expenditure restrictions contribute to the unfortunate fact that a mere 119 grants have been awarded for over 1200 NPL sites. The following improvements are essential to ensure accessibility and effectiveness of the grants.

i. The grant application must be clarified. The current 341 page application handbook which attempts to explain the TAG process is far too lengthy and complicated. Community organizers unilaterally agree that the TAG application is an obstacle to receiving assistance.

ii. Grants must be available *before* EPA has begins its response action at the site and prior to the development of the Record of Decision. Without technical assistance prior to commencement of remediation action, communities are effectively barred from participating in decisions which will affect their health and the character of their neighborhood. When information and data are clearly presented, communities across the nation have demonstrated their ability to understand difficult problems, and actively participate in developing solutions. The TAG program should promote such participation by educating communities from inception of the Superfund process.

iii. EPA must be required to notify community groups of the availability of technical assistance grants. a number of environmental justice activists argue that a significant impediment to receiving funding is the lack of early notice from EPA that technical assistance is available. Further, EPA should be required to assist and expedite completion of the application process where communities do not have sufficient expertise.

iv. Restrictions on expenditures must be relaxed. Currently, extensive restrictions regarding how grant funds are to be utilized undermine Congressional intent to provide assistance to communities. Technical assistance must broadly interpreted to permit community discretion when deciding how best to use grant funds. For example, communities should be allowed to employ individuals with legal expertise so that they can better understand the legal options associated with the cleanup process. In addition, the matching requirement is burdensome for low-income communities and should, therefore, be eliminated.

v. Grant applications must be multi-lingual. applications in English are a barrier to those communities who speak another language. These communities should

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[22] Statement of Tom Goldtooth before the Subcommittee on Civil and Constitutional Rights, The U.S. House of Representatives Committee on the Judiciary, March 4, 1993.

[23] *Superfund Technical Assistance Grant Handbook*, U.S. Environmental Protection Agency, April 1990, p.vi.

[24] CERCLA § 117(e)(1), 42 U.S.C. § 9617(e)(1).

not be excluded from eligibility from the TAG because they are unable to read the application.

vi. The grant ceiling of $50,000 should be raised. Because of the expense of securing technical experts and the voluminous amounts of information, communities are reporting that the $50,000 ceiling is insufficient. One option for determining an appropriate grant amount is to reserve a certain percentage of the entire Superfund to be used for technical assistance grants (e.g. many activists have suggested 3%). In comparison to the prodigious resources currently expended, increased grants would be moderate and should save both time and money by involving the public in decision-making.

vii. Technical assistance should be available to communities located near removal sites. TAGs are now available to communities affected by National Priority List (NPL) sites, but not where EPA conducts removal actions to remedy immediate threats to human health. People affected by emergency removal sites urge that they too should be informed and educated about the surrounding risks.

viii. Technical assistance grants should be a lump sum payment rather than a reimbursement program. The current system requires community groups to submit receipts in order to receive awarded monies. This system is burdensome. Instead, community groups could be accountable for the money spent by submitting to EPA quarterly accounting records with receipts.

C. COMMUNITY WORKING GROUPS

To ensure for effective public participation and improve the pace and quality of the cleanup process, EPA should be required to work with communities to create Community Working Groups (CWG) at each Superfund site consisting of community leaders and community representatives, and if desired by the community, other appropriate organizations (e.g. civil rights groups, environmental organizations, health professionals, and academic institutions).

The Community Working Group would receive regular notification about deliberations and meetings and assume a key decision-making role concerning health assessments, responses to hot-spots, remediation alternatives, cleanup schedules, and relocation decisions. Each of these stages is vitally important from the perspective of communities affected by the contamination.

Community Working Groups are integral to public participation and essential to Congressional efforts to guarantee effective community involvement. CWGs will provide a community component to PRP and EPA roles in the decision-making process, enhance the quality of EPA decisions, and expedite the Superfund process through consensus-building and early controversy resolution.

One example of where a CWG could be instrumental is sites where relocation of residents is warranted. In these cases, EPA would work primarily with the Community Working Group to ensure that the nature and institutions of the community are preserved throughout the relocation process.

In cases where EPA tries, but is unable to establish a representative CWG, the Agency should facilitate participation by individual community members in deliberations and meetings concerning health assessments and cleanup strategies.

D. HEALTH ASSESSMENTS

Communities question the adequacy of health assessments conducted by the Agency for Toxic Substances and Disease Registry (ATSDR) [25] and the responsiveness of these health assessments to public concerns. As observed in the widely acclaimed investigative study, *Inconclusive by Design: Waste, Fraud and Abuse in Federal Environmental Health Research*,

> One of the most heinous and pervasive defects of the health assessments program has been a lack of ATSDR contact with local residents. The result has been an appalling absence of even the most basic understanding of local conditions. [26]

Even EPA is aware of the ATSDR's dismal history of reaching out to communities. In its report *Environmental Equity: Reducing Risk for all Communities*, the Agency admits that,

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[25] CERCLA § 104(i), 42 U.S.C. § 9604(i).

[26] *Inconclusive by Design: Waste, Fraud and Abuse in Federal Environmental Health Research*, An Investigative Study by the Environmental Health Network and the National Toxics Campaign Fund, May 1992, page vii.

Poor and racial minority communities are rarely involved in Agency rulemakings and seem to be unaware. of their ability to petition ATSDR to perform health surveys on their communities. [27]

To avoid the widely held perception that ATSDR assessments are not objective [28] and ensure the integrity of ATSDR health assessments and the responsiveness of ATSDR to community needsl ATSDR should be independently funded. In addition, more money should be spent on the agency's basic research into health effects and exposure pathways of toxic chemicals. Environmental justice activists are deeply skeptical of the value of ATSDR's work when its assessments appear to merely reflect EPA's own determination. Furthermore, Congress should mandate that ATSDR work closely and cooperatively with Community Working Groups to ensure that its assessments are responsive to the concerns of the community whose health is at risk.

E. TECHNOLOGIES CLEARINGHOUSE

Congress should establish a technologies clearinghouse for public use that catalogues and describes the advantages and disadvantages of technologies which have successfully been utilized to remediate hazardous waste sites.

The value of a technologies clearinghouse is twofold: First, access to technological information enhances a community's ability to understand cleanup methodologies and alternatives, thereby facilitating knowledgeable remedy selection; second, cataloguing available, effective technologies promotes implementation of new, alternative, and cost-effective cleanup techniques. Due to their serious concerns about protecting public health and the environment, community groups are more likely to locate and advocate for a variety of alternative methods.

F. CITIZEN SUITS

The United States Congress should amend the current Superfund statute which authorizes for citizen suits so that community groups can enforce their right to participate in the Superfund process. [29] The current statutory provision authorizes citizen suits against EPA, "where there is alleged a failure of the President or of such other officer to perform any act or duty under" CERCLA. [30] Unfortunately, courts have held that citizens may not challenge an EPA remedial action until the remedial action or that phase of the action which is under challenge has been completed. [31]

Congress should explicitly authorize citizens to seek injunctive relief from EPA if the Agency fails to provide adequate notice regarding substantive deliberations and meetings concerning Superfund remediation activities. Citizen suits should also be authorize where EPA fails to establish a representative Community Working Group within a designated time period after the site is listed on the NPL.

In addition to injunctive relief to compel EPA to comply with the requirements of public participation, Congress should authorize recovery of attorney's fees, as provided in the Equal Access to Justice Act. [32]

III. CONCLUSION

Public participation in the Superfund process should not be a discretionary community relations mechanism. Public participation is essential to an effective, expeditiously implemented and equitable Superfund program benefiting all affected communities. I strongly urge that the United States Senate incorporate the provisions outlined in my testimony in the Superfund reauthorization legislation.

This concludes my prepared remarks. I would be happy to answer any questions that Committee members may have.

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[27] *Environmental Equity: Reducing Risk for all Communities*, Volume 2: Supporting Document, U.S. Environmental Protection Agency, June 1992, page 19.

[28] See generally, *Superfund: Public Health Assessments Incomplete and of Questionable Value*, U.S. General Accounting Office Report to the Chairman, Subcommittee on Oversight and Investigations, Committee on Energy and Commerce, House of Representatives, August 1991.

[29] CERCLA § 310, 42 U.S.C. § 9659

[30] CERCLA § 310(2)

[31] *Schalk* v. *Reilly*, 900 F.2d 1091 (7th Cir. 1990).

[32] 28 U.S.C. § 2412

LAWYERS' COMMITTEE
FOR CIVIL RIGHTS UNDER LAW

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August 16, 1993

The Honorable Frank R. Lautenberg
Chairman
Subcommittee on Superfund, Ocean & Water Protection
Committee on Environment & Public Works
United States Senate
Washington, DC 20510-3002

Dear Senator Lautenberg:

I appreciate the opportunity to testify at your July 28, 1993, hearing concerning Superfund reforms and public participation in the cleanup process. As I mentioned during the hearing, it is essential to obtain input from communities about issues of concern related to the U. S. Environmental Protection Agency's Superfund program. Your leadership in securing this input is highly valued.

The enclosure contains responses to the questions you submitted to me via letter dated August 3, 1993. Please contact me if I can be of further assistance.

Sincerely,

Deeohn Ferris, Program Director
Environmental Justice Project

Enclosures

LAWYERS' COMMITTEE FOR CIVIL RIGHTS UNDER LAW

RESPONSES TO ADDITIONAL QUESTIONS

FOR THE RECORD OF THE HEARING

BEFORE THE

SUBCOMMITTEE ON SUPERFUND, OCEANS & WATER PROTECTION

COMMITTEE ON ENVIRONMENT & PUBLIC WORKS

UNITED STATES SENATE

JULY 28, 1993

SUBMITTED BY DEEOHN FERRIS

PROGRAM DIRECTOR, ENVIRONMENTAL JUSTICE PROJECT

LAWYERS COMMITTEE FOR CIVIL RIGHTS UNDER LAW

ON

AUGUST 16, 1993

1. WHAT ACTIVITIES THAT SHOULD BE FUNDED BY TAGS ARE CURRENTLY NOT ALLOWED?

Restrictions on allowable activities under TAG grants constrain the ability of grant recipient communities to actively participate in the Superfund cleanup process. Expanding the list of allowable activities would enhance information and data collection capabilities related to Superfund cleanups and facilitate community education about sites. Furthermore, enabling access to more and better information advances the goals of knowledgeable, productive input and active participation in the decision-making process by nearby residents.

A preliminary survey of communities yields the following list of suggested expanded activities:

-- community organizing to participate in the cleanup process;

-- verification of data and health assessments;

-- generation of new data to fill data gaps or where there are special community concerns (e.g., offsite implications of contamination);

-- community training, language translation services;

-- hiring experts (e.g., legal experts to interpret legal issues and health experts, TAG preparation);

-- workshops on alternative technologies; and

-- funding a community monitor to observe on-site activities.

2. ARE YOU AWARE OF MANY INSTANCES WHERE MOST OF THE AFFECTED RESIDENTS IN A LOCAL COMMUNITY NEAR A SUPERFUND SITE DO NOT SPEAK AND UNDERSTAND ENGLISH?

Spanish-speaking residents surrounding at least one Superfund site in the Southwest have experienced difficulty with language barriers: the Tucson International Airport site in Arizona. Resource limitations have delayed development of an environmental justice catalogue of Superfund sites located in areas where english is not the primary language. Nevertheless, language barriers experienced at Superfund sites are analogous to those experienced by citizens who, despite language barriers, attempt to become involved in the permit process and are impeded (e.g., the Kettleman Hills-Waste Management, Inc. incinerator permit).

To ameliorate the impact of exclusion on the basis of language, EPA should: (1) conduct a survey of sites to determine where language barriers exist; (2) where applicable, publish documents and materials in the primary language of, as well as language understandable to the affected community; and (3) provide translators at public meetings and hearings where site cleanup issues are discussed.

3. CAN YOU ELABORATE ON THE ROLE OF TRIBAL GOVERNMENTS IN THE SUPERFUND PROCESS? DO YOU BELIEVE THEY SHOULD RUN THEIR OWN CLEANUP PROGRAMS LIKE THE STATES?

The Indigenous Environmental Network advises that, in accord with the U. S. Environmental Protection Agency's (EPA) Indian Policy, recognized Tribes are to be accorded the same status as states with regard to administration of federal environmental programs. Further the Network advises that the Agency has failed to implement that policy.

If the Agency would fully implement the Policy, Tribes would assume primary responsibility to implement and enforce federal programs in the same manner and with the same authority as states. Full implementation would fulfill the desire and right of Tribes to sovereignty and self-determination with regard to Superfund and all other environmental programs.

In addition, the Indigenous Environmental Network advises that funding for development of Native American environmental infrastructures is woefully inadequate. Although Congress has authorized federal funding

for Tribes, appropriations are far below authorized levels. Furthermore, the EPA Indian Program budget is one tenth of one percent of the overall Agency budget. This approximately $10 million must cover over 500 Tribal communities, many without environmental infrastructures.

I concur with the Network, which represents grassroots multi-Tribal leadership throughout this nation, that Native Americans with the greatest stake in environmental decisionmaking on Tribal lands should assume primary responsibility for administering and enforcing the Superfund program.

I submit for your information and review, the Testimony of Tom Goldtooth, National Council Officer, Indigenous Environmental Network, before the Committee on Government Operations, Subcommittee on Legislation and National Security, U. S. House of Representatives, April 28, 1993.1/

1/ The testimony referred to has been retained in committee files.

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August 30, 1993

The Honorable Frank R. Lautenberg
Chairman
Subcommittee on Superfund, Ocean & Water Protection
Committee on Environment & Public Works
United States Senate
Washington, DC 20510-3002

Dear Mr. Chairman:

This letter is to follow-up my August 16, 1993, reply to your request for responses to questions for the record of your Subcommittee's Superfund hearing, which convened on July 28, 1993. I have some additional information that may be useful in response to question #2 regarding language barriers experienced by residents near Superfund sites.

In addition to the area near the Tucson International Airport site in Arizona, another community where many residents speak Spanish as a primary language is the Gateway neighborhood in Phoenix, Arizona. As a result, this community, which abuts the 52nd Street (Motorola) Superfund site, has encountered difficulties with regard to providing input and actively participating in the governmental cleanup process.

Please contact me if I can be of further assistance.

Sincerely,

Deeohn Ferris, Program Director
Environmental Justice Project

TESTIMONY OF DR. EDWIN H. CLARK, II, PRESIDENT, CLEAN SITES, INC.

PUBLIC INVOLVEMENT IN SUPERFUND

Introduction

Mr. Chairman and Members of the Subcommittee, my name is twin Clark. I am the President of Clean Sites. We appreciate the opportunity to testify on the need for expanded community involvement in Superfund.

Clean Sites is a not-for-profit public interest organization dedicated to accelerating the cleanup of the Nation's hazardous waste sites. We were organized in 1984 by a group of industry and environmental leaders and former governmental officials to address the problems that were then plaguing Superfund. Many of the same issues that were identified then remain unresolved and others, like the need for greater community involvement, have since surfaced. Clean Sites addresses many Superfund issues by undertaking policy analysis and educational initiatives ad by providing technical and managerial site assistance, mediation and cost allocation services.

We are fortunate to have a diverse Board of Directors—including leaders from industry ad environmental groups and former EPA officials—who are actively involved in our organization. Currently, the Board is formulating recommendations on Superfund Reauthorization ad will be issuing a report of their findings in the late Fall. One of the issues that they are addressing is public involvement in Superfund. Today, I will provide you with an overview of the problems that our analysis has identified in this area and some possible ideas for improvement. Unfortunately, our final recommendations we will not be ready until this fall, but we would very much like to have an opportunity to discuss them with you at that time.

PROBLEM DEFINITION

The role of the public in Superfund is an issue that Clean Sites has pursued directly ad indirectly over the past ten years. We have developed new ways of including the public at some of the sites where we have been involved and have conducted seminars and workshops on public involvement. Three years ago, we hosted a series of Community-Industry Forums designed to improve communication between and among communities, PRPs, and government agencies. At about the same time, we undertook a major effort to review the Superfund remedy selection process. Both efforts identified the need to involve the public early in the cleanup process and the need to give affected citizens a voice in remedy selection. These issues were also extensively discussed at our December 1992 Superfund Reauthorization Outreach Seminar on Public Involvement—one in a series of public meetings that we held in the past year.

Based upon our experience and our analysis, we think that the existing public involvement program needs to be improved for at least the following reasons:

1. The public has a right to a more responsive process. The current program gives too little opportunity for participation by citizens most affected by actions taken at a site in their community.

2. Enhanced public involvement will result in more effective cleanups. Citizens can provide valuable information about site history and local conditions that may affect the cleanup. They also will have insight into how the site property may be used in the future, community interests, and the types of remedies that best meet local needs. This information can significantly help to identify the best remedy.

3. Improved public involvement will increase efficiency by reducing conflict throughout the remedial process. Only by involving all groups with an interest in the site, can areas of conflict be identified. This is best when initiated early and continued throughout the remedial process. If key stakeholders are not a part of the decision-making process, they are more likely to focus their energy on blocking actions they oppose. A better approach would be to foster consensus-building and collaboration among all stakeholders from the beginning.

In conducting our Superfund Reauthorization analysis, we initially focused our attention on defining the current problems. We have identified three key problems with the current Superfund public participation program.

1. The current program focuses more on "community relations" and not on "public participation".

Currently, citizen involvement consists primarily of public comment opportunities and public meetings held after a preferred remedy is identified. Seldom are citizens given opportunities to provide information, raise issues of concern, and present their ideas on a preferred remedy.

For every site, EPA develops a community relations plan that incorporates information obtained from citizen interviews. While EPA does sometimes use these plans to take public involvement beyond the limited legal requirements and actively communicate with citizens about site activities, for the most part, the plans become outdated quickly and many of the recommendations made in them are not undertaken. Thus, in spite of many good intentions, the public's role in practice, is predominately that of observer.

Citizens resent the fact that they are permitted only to respond rather than to participate. They see a response role as inadequate since decisions made will affect them more than perhaps any other group involved with the site. They have lived with the site and will continue to feel its impacts on their community and personally long after EPA has departed.

Citizens also find public meetings to be inadequate as the sole forum for discussions. These meetings can be intimidating to the citizen who has had little time to review the volumes of highly technical material. Meeting agendas are set by the EPA and tend to focus on EPA presentations rather than citizen input. Under this approach, citizens often feel that the government considers community concerns to be relatively unimportant, and that their concerns are not seriously addressed.

Although it is appropriate that the decision-making authority for a Superfund site remedy rest upon the government, citizen input is crucial. If citizens were allowed more involvement as information about the site and potential remedies are developed, they would have greater opportunity to understand and make thoughtful comments about the preferred remedy. This increased understanding and opportunity for public input would, in turn, increase the likelihood that the final remedy would be accepted by the citizens, as well as the PRPs and the government.

Clean Sites sees the public's desire for greater involvement as a major Superfund concern. We suggested ways to incorporate greater public participation in the remedy selection process in our 1990 report, *Improving Remedy Selection.* EPA has responded favorably to our ideas and we are testing them at the Li Tungsten site on Long Island, New York. At this site, we have helped to form a citizen advisory committee that will participate throughout the remedy selection process by reviewing information, raising concerns, and making recommendations. Our early community outreach efforts have received very positive support and we expect a continuing high level of public involvement. Initially, it was unclear how interested the public interest at this site would be. After making an effort to reach out to the citizens, Clean Sites discovered that interest is quite high. More than 100 people attended the first public meeting for the site.

2. The affected public is not brought into the remedial process early enough or as often as citizens feel is necessary.

Citizens want to be involved early in the process, at the time that a site is initially identified and evaluated. They also want to be involved in the investigation and analysis phase of the process (the RUFS), so that they can seriously review and comment on the different options for the site. Keeping citizens out until the remedy is already well formulated reduces community involvement to a after-the-fact comment role.

The communities where Superfund sites are located often feel that they are kept at arms length during the remedial process. They see EPA and the PRPs engaging in discussions about the site studies, remedial options, and cleanup costs. This raises concerns that 11deals1, may be cut at the public's expense. Without early involvement and a sharing of information, citizens cannot be expected to trust the process.

Through our site work across the country, it has been our experience that both removal and remedial activities progress better if citizens are involved early and consistently. For example, at a large PCB site in tile Midwest, Clean Sites successfully turned around a rapidly deteriorating relationship between citizens, EPA and the PRPs by reaching out to the community to inform them about site conditions and, as cleanup plans developed, about future site cleanup and investigation activities. Local citizens were initially angry about the apparent inactivity regarding their site and were frustrated by their lack of information. Clean Sites worked directly with EPA and the community to involve the public at the outset of the removal action by holding a series of town meetings. Throughout the removal, we stationed a project manager on site and made sure that he was accessible to the citizens, town officials, and the press. As a result, the townspeople gained an understanding of the removal process, saw progress

and action at the site, had access to information, and had sufficient opportunities to express their concerns. These actions changed the attitude of the community. By the end of the removal, the citizens strongly supported the cleanup program for their site.

3. The affected public does not have ready access to information and may not have access to the technical resources necessary to develop a reasonable understanding of the risks posed by the site before, during, and after site remediation.

Citizens would like to receive more information than they do under the existing public participation program, and they would like to have access to information earlier so they can make carefully considered comments. They are concerned that information gathered about the site has already been condensed and interpreted in the final documents that they receive for comment. They would like the opportunity to see draft documents at the same time as others who are involved at a site.

Even if the interested public can access most of the site information, they may not be able to understand the technical material presented in the documents. Congress, in the 1986 Superfund Reauthorization, recognized this problem and created a unique technical assistance grant program for citizens. The TAG program authorizes grants for community groups to obtain technical assistance that will help them interpret site information. Although the basic idea of providing grants is sound ad well received, the application and accounting process has been difficult and cumbersome for most community groups. EPA has already addressed many of these problems, and we commend their efforts to make technical resources more readily available to communities.

We have also heard other concerns expressed about the TAG program. For example, many groups have a difficult time meeting the matching fund requirement. The size of the grants is too small. The requirements for who can apply and receive a grant are too limited. Only one community group at each site may receive funding.

Clean Sites can attest to the fact that making open communication and technical assistance a priority helps overcome conflict and keeps site activity moving forward. At a site where we serve as an independent technical advisor, we work together with the PRPs, citizens, and government representatives to identify concerns, obtain and present technical information, and discuss ongoing and future site activities. Although differences of opinion remain, all the groups are comfortable with the process ad site activity is able to progress.

In summary, citizens want ad need early involvement, access to information and technical assistance, ad better ways to communicate their concerns.

SUGGESTIONS FOR IMPROVING PUBLIC PARTICIPATION

How might the issues raised above be addressed?

First, EPA must make public involvement a priority. A heightened awareness of the importance of community involvement rather than community "relations" and a commitment to foster communication and public input will help send the message that this is important. The limited personal contact that has evolved in a system that relies primarily on public meetings for communication must be changed. Site project managers, as well as community relations personnel, should be trained and prepared to respond to citizen concerns (since they are often the front line contact with the community). Public involvement should not be just an afterthought.

Second, information-sharing wherever possible should be encouraged. Available information should be presented as early as possible, starting at the PA/SI phase and continuing until the site is cleaned up. The format for information-sharing is as important as timing. Citizens should be given opportunities to discuss site information in less formal settings as well as public meetings.

Third, Congress should carefully review the TAG program. It should determine whether EPA's revisions to the application and administration requirements have adequately addressed concerns about bureaucracy and red tape. Have they made the grants more accessible? It should investigate whether recipients feel that the grant improved their ability to understand site information ad to communicate their concerns. And finally, it would be useful to know if the TAG program has improved public participation, not only from the citizens point of view, but also from the PRP's ad the EPA's perspectives.

Finally, Congress should look at the different ways to increase public involvement that have been tried. Clean Sites has used an open, information-sharing approach at some sites. At these sites, we identified community leaders to get

them involved early, worked to keep them informed, ad asked them to help convey information to others. At some sites, citizen advisory boards have been established. Clean Sites believes this is the most effective method of involvement We are pleased to see that the Department of Energy is making citizen advisory groups a critical part of its public participation efforts.

Whether citizen involvement is structured through an advisory group or is more informal, it is vital to successful site remediation. This is especially true as the nation begins to recognize the need to look at sites in light of their future use. Resource use and planning issues have traditionally been local decisions. Citizens have a right to participate in decisions that affect the character of their communities, including how property is or is not used. As we begin to investigate returning sites to beneficial use or developing trustworthy protective measures, community input, involvement, and acceptance will need to be a part of our hazardous waste site cleanup programs.

THE ROLE OF THE STATES IN SUPERFUND

Introduction

I would also like to take this opportunity to submit comments on the role of the states in Superfund.

Clean Sites understands the needs and concerns of different states about the federal Superfund program in light of their various state hazardous waste cleanup programs. We have significant experience in working with states on hazardous waste cleanups. We have worked with five different states to help them develop their programs. We developed and maintain a online information ad network service for state environmental regulators that allows the to access information about Superfund and the various state programs and to communicate with each other. We have also conducted research and analysis on the states' role in Superfund as part of our reauthorization efforts. Involving state environmental agencies, the EPA, ad other knowledgeable sources has been an important part of our reauthorization efforts. We have conducted numerous interviews with EPA and state environmental agency personnel and held a public seminar on the states' role in Superfund to obtain input and insight into this complex issue.

During our investigations, we found that state and federal cleanup efforts are inextricably linked. The nation's hazardous waste site cleanup problem is much larger ad more complex than originally assumed. The existing Superfund program was not designed to address even the majority of the identified sites. Yet the National Priorities List keeps growing as the federal government continues to assess identified sites. With the emergence of active and capable state cleanup programs, it is unclear where and when the federal government should be in charge and when the problem is more appropriately handled by a state. This lack of clarity encourages duplication of work and fosters conflict between the states and the EPA.

Problem Definition

The interplay between the states and the EPA on hazardous waste cleanup issues is extremely complex ad goes beyond Superfund. The problems can, however, be broken down into three key issues.

1. The existing division of authority between the states and the EPA under the Superfund program is unclear and inconsistent. This promotes conflict and duplication of effort.

Different states have different levels of involvement ad, even within a single state, different NPL sites will be handled differently with EPA taking the lead on some ad the state serving as the lead agency on others. On the surface, the concept of lead and support agency presents a cooperative method to apportion responsibility. In truth, it practically guarantees redundancy. By involving two levels of government, each with differing incentives, the natural tendency is for each governmental agency to protect its interests by ensuring that work is "properly done". This situation encourages each governmental entity to, at a minimum, check up on the other's work. In the extreme, It can result in duplicate studies and the assignment of both state ad federal site managers.

The requirement that states be substantially and meaningfully involved also opens the door for conflict on such critical issues as the level of contamination, cleanup standards, and remedial options. When the agencies in charge disagree, citizens become confused and fearful and PRPs are left with a cloud of uncertainty hanging over their responsibility. Damage to stakeholder relationships results and this severely affects cleanup progress and confidence in the remedy.

2. Conflict between the states and the EPA is encouraged by cost share requirements that create opposing priorities and by inconsistent cleanup standards.

Under CERCLA, states have a responsibility to pay for 10% of fund lead cleanups (or 50% if the state or a political subdivision thereof operated the site) and 100% of the operation and maintenance (O&M) required after the remedial action is completed. Although these responsibilities may seem straightforward, they actually present may opportunities for conflict. Because of the disparity in cost shares, the state has a financial incentive to pursue a remedy that is construction intensive. On the other hand, the EPA has a greater incentive to select a remedy that is O&M intensive since the federal government is responsible for the greater portion of the remedial costs. This built-in conflict can delay cleanup and confuse the public and the PRPs.

Any remedy selected for an NPL site must attain any applicable or relevant ad appropriate requirements (ARARs) that the state may have under its environmental or facility siting laws. The process of identifying ARARs and incorporating them into the proposed cleanup plan can generate several problems.

First, the EPA and the PRPs complain that the states do not always identify their ARARs in a timely manner so that cleanup plans and cost estimates can be greatly affected late in the decision-making process. Second, states complain that the EPA can, and sometimes, does, disregard their laws by waiving their requirements. If state cleanup requirements are not met, that state may refuse to sign the consent decree and challenge the decision in court. Third, EPA frequently believes that state ARARs originally developed for other purposes, result in a level of cleanup that is significantly beyond that which is necessary to protect health and the environment. The end result is a delay in the cleanup as the state, and EPA struggle to resolve their differences of opinion.

3. Overlap between state and federal cleanup programs encourages work duplication, sends mixed messages to PRPs and the public, and disrupts remedial efforts.

Most states now have an operational hazardous waste cleanup program to address those sites within their state that are not listed on the NPL. Many of these programs are at least as effective as the federal Superfund program in cleaning up sites. Because of the growing state activity, the potential for overlap between the EPA ad the states has increased. Not infrequently, a state will move forward with a cleanup, only to have the EPA begin site investigations or nominate the site for the NPL. This confuses the PRPs who do not know which agency is in control or which regulations they must follow. It also disrupts ongoing cleanup efforts because PRPs are reluctant to move ahead with a remedy that may be changed by the federal government. Duplication ad waste are an inevitable result.

Many states are currently maintaining two separate programs, one for NPL sites ad one for non-NPL sites. Some of the states with stronger programs favor a decreased federal role at sites within their boundaries. Many deliberately try to keep sites off the NPL so that they do not have to address the site under the federal Superfund program. They feel that they can move the sites more quickly and efficiently through their state programs.

Suggestions for Change

All of the problems presented above, support the need for developing a much clearer delineation of authority and responsibility between the states and the federal government at both NPL and non-NPL sites. There are a variety of possible options for doing so ad some of these are outlined below. At this point, Clean Sites cannot make specific recommendations for consideration, but we can identify some of the advantages and disadvantages of the different options.

Congress could reduce conflict by limiting the states' role in Superfund. Some suggestions raised in our public meeting include:

1. Eliminating the state's responsibility for funding O&M at fund lead sites or making the state share the same for both remedial and O&M costs.

2. Eliminating the state cost share for remedial activities at fund lead sites where the state is not a PRP.

3. Removing the state concurrence requirement for proposed remedies that do not meet state applicable or relevant and appropriate standards (ARARs). This would, in effect, give the state a review and comment authority only.

4. Eliminate the relevant and appropriate portion of the requirement to meet ARARs, leaving applicable state and federal laws to guide cleanup standards.

5. Eliminate state ARARs altogether for sites cleaned up under the federal program.

By changing both the cost share provisions and the requirement that cleanups meet all state standards, Congress would in effect make the Superfund program truly a federal responsibility. State investment as well as authority and influence would be minimal. This has the obvious advantage of reducing conflict. The disadvantages are just as obvious. States would not be able to significantly influence or alter decisions that affect their citizens and their natural resources. After having granted states more opportunities for participation through SARA, such restrictions may not be acceptable.

Congress may consider dividing responsibility for NPL sites by legislating provisions for state delegation. Some possibilities include:

1. Allowing delegation on a site-by-site basis and giving the state sole decision-making authority for remedy selection at delegated sites if the state program meets established federal criteria. For non-delegated sites, clearly define the state role or give the federal government sole decision-making authority.
2. Delegate a subset of the NPL sites to qualifying states. Clarify state and federal responsibilities for delegated and non-delegated sites.
3. Delegate all of a state's NPL sites if that state's cleanup program meets established federal criteria. Again, state and federal responsibilities must be clearly defined.

Delegation in any form raises a myriad of concerns. The logistics regarding funding of state efforts, quality assurance, oversight needs, timing of delegation, establishing program criteria, etc. would be complex and are a real disincentive to this approach. Similarly concerns over potential disruption to ongoing cleanups and lag time in implementing a delegated program would require careful attention. On the other hand, full or limited delegation would reduce conflict and duplication of effort, place cleanup responsibility at a governmental level that is much closer and responsive to the problem, and force states to weigh the costs and benefits of cleanup in relation to their universe of sites and other pressing state problems. Delegation would also put the Superfund program more in line with other environmental legislation.

Congress may consider limiting the federal role at sites that are not currently listed on the NPL. Some options include:

1. Setting stricter criteria for NPL listing such as disallowing any site to be listed if a state or PRP has already initiated a remedial action and prohibiting the EPA from lowering the NPL threshold for listing.
2. Capping the NPL so that only a certain number of sites can ever achieve NPL status or so that no more sites are added to the NPL unless the site affects more than one state or requires cleanup activities that cannot or will not be accomplished by the state.
3. Establishing state lists under Superfund law whereby states can apply to have non-NPL CERCLIS sites listed exclusively under their state programs. Prohibit EPA from becoming involved with sites on these state lists as long as reasonable progress is being made in the remediation.
4. Establish procedures to assign sites to states under a state deferral program.

By allowing the states an opportunity to take responsibility for sites that are not currently on the NPL and ensuring that EPA will not later list the site or require further cleanup, these options would eliminate the duplication of effort that is now occurring and the uncertainty and caution some PRPs feel when undertaking cleanups under state law. These options also acknowledge the responsibility that states have for public health and environmental quality within their jurisdiction. Furthermore, they would remove some of the burden that has been placed on the federal government and free EPA to address problems of national concern or truly threatening situations. On the other hand, accommodation would have to be made for states that are unable to address the sites that are located within their jurisdiction but that may require cleanup. In addition, the federal government may need to provide financial assistance even i0 states with strong programs, if limiting the federal role significantly increases the states' responsibilities.

These are some of the options that Clean Sites is currently evaluating regarding the clarification of the federal and state roles in Superfund. Although we do not, at this time, have specific recommendations about what modifications should be made, we do consider this issue to be very important The current situation creates too much uncertainty, conflict, ad duplication of effort Changing this situation could significantly reduce costs and increase the rate at which sites are cleaned up.

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Edwin H. Clark, II, Ph.D.

August 31, 1993

Honorable Frank R. Lautenberg
Chairman
Superfund, Ocean and Water Subcommittee
Committee on Environment and Public Works
U.S. Senate
Washington, DC 20510-3002

Dear Senator Lautenberg:

Clean Sites appreciated the opportunity to participate in your July 28 hearing on the role of local citizens in the Superfund program. As I testified, we think that the existing public involvement program needs improvement, and we are pleased with the concern you have shown for this very important issue.

Attached is our response to the question you forwarded to us for submission in the hearing's written record.

Again, thank you for the opportunity to testify. We look forward to sharing our further recommendations with you in the fall when our Superfund Reauthorization project is completed.

Sincerely,

Edwin H. Clark, II
President

Honorable Frank R. Lautenberg

Question:

One of your recommendations is to make draft documents more readily available to citizens. Won't this lead to some confusion or even suspicion if changes are made to those documents when they go out in final? Won't this make people preparing drafts more careful and thereby slow down the process? Would you share your drafts with the public, too?

Answer:

Our experience has been that including the public as participants from the start rather than relagating them to the role of respondent at the end enables them to contribute in a constructive manner to the review of draft documents. This requires giving information to the public early enough so they have a chance to review and understand the material, and to get technical advice if they choose.

We are not talking about sharing the first internal drafts. Rather, we believe that when draft documents are submitted to EPA from PRPs (and vice versa), the public should be included in the loop. If Clean Sites had a draft at that stage, we would be willing to share it as part of the process.

It is quite possible that draft documents may change after review, since this is a normal part of the process. There well may be some suspicion and confusion when changes result, but we believe that in the long run the people will understand this and the final outcome will benefit from public involvement. Presumably if comments are made on draft documents, citizens, too, will have an opportunity to comment; and changes may be made to reflect their input. If they are involved in the process of making changes in the draft documents, the citizens understand the reasons for the changes. They are less suspicious and disruptive of an open process like this than one that presents them the final document to review without information on the controversial issues or on what decisions and changes have been made in reaching the final position.

If sharing draft documents with the public results in preparation of a solid document, this should not slow down the process; it may even speed it up. For example, EPA may be more willing to approve documents that are better prepared and require less editing.

TESTIMONY OF JOCELYN WHITE, PRESIDENT, ENVIRONMENTAL ISSUES MANAGEMENT

Mr. Chairman and members of the Subcommittee, my name is Jocelyn White, and I am president and founder of Environmental Issues Management, Inc. (EIM). I am pleased to have been invited to testify about my company's experience with EPA's community relations program and with its Technical Assistance Grant (TAG) program. Before I begin, I would first like to give the Subcommittee some background on EIM.

EIM was founded in 1990 to provide sound environmental strategic planning and communications counsel to businesses faced with complex environmental issues. EIM specializes in hazardous waste site issues and has been involved in the cleanup of over 40 hazardous waste sites across the country. These sites have involved federal (under the Comprehensive Environmental Response, Compensation, and Liability Act) and state Superfund, Resource Conservation and Recover Act (RCRA) corrective action, and voluntary cleanups.

In particular, EIM focuses on Superfund site cleanups. EIM coordinates the legal, technical, and communications efforts at a Superfund site in order to help identify and obtain remedies that are appropriate for the actual risk posed by a site. EIM bases its efforts on science and the law and uses its expertise in communications to address the community, media, elected officials, and environmental interest groups.

EIM helps the Superfund process by serving as a broker between the Potentially Responsible Parties (PRPs) and the community, PRPs and EPA, and sometimes between EPA and communities. As such, we work closely with EPA remedial project managers (RPMs) and community relations coordinators (CRCs).

EIM is knowledgeable about Superfund community relations issues because we work in the field on site-related issues. Although we are based in Washington, DC, we spend nearly half of our time on the road working with communities at hazardous waste sites. In essence, EIM derives its experience and knowledge of community relations issues not from studies or conferences, but from working with people affected by the issues every day.

I also speak to you today, not just on behalf of a company with in-depth experience in Superfund community relations issues, but as a citizen who lives on a hazardous waste site. My Washington neighborhood of Spring Valley was declared a Formerly Used Defense Site (or FUDS) when buried World War I munitions, including mustard gas and phosgene, were discovered in January of this year. I have experienced many of the same emotions as citizens across the country who fear the loss of property value, are concerned about potential health effects, and are frustrated and angry over the lack of information about what is happening at a site.

I. SUPERFUND COMMUNITY RELATIONS

As you know, the ultimate purpose of my testimony is to explore ways to streamline and accelerate the cleanup of Superfund sites. One aspect of the program that is intended to facilitate the cleanup of Superfund sites is the community relations program. Mr. Chairman, the most important aspect of my testimony today is the call for quality. I believe that my views on the need for quality in the services that government provides to its citizen-customers is consistent with Vice President Gore's efforts to reinvent government. I think we can all agree that mediocre services on the part of government are no longer acceptable to most citizens. Improving the quality of the Superfund community relations program may be a minor change in the whole scheme of reinventing government, but to the people who live on or near Superfund sites, it will be a major, and very useful, reform.

Before I discuss the EPA Superfund community relations program specifically, it is important for the subcommittee to understand the backdrop against which EPA and communities must work when faced with the cleanup of hazardous waste sites. That backdrop includes uncertainty about risks related to the sites, poor risk communication, and a program involving numerous technical issues and involved parties.

To begin, the science of evaluating health risks and understanding exposure is still in its infancy. This is particularly true when determining the potential effect of hazardous waste sites on public health. The National Research Council's (NRC) book, *Environmental Epidemiology* discusses this problem at length. The NRC concludes that the public health impact of hazardous waste sites cannot be satisfactorily assessed due to a lack of information. The book states that although "billions of dollars have been spent in the past decade to study and manage hazardous waste sites in the U.S., an insignificant portion has been devoted to evaluate attendant health risks . . . resulting in an inadequate amount of information between exposure and effect."

This lack of science related to exposure and effect at hazardous waste sites is further emphasized in an article entitled "Rodent Carcinogens: Setting Priorities", *Science* (10/9/92). The authors show that when the same test standards for carcinogenicity (*i.e.*, rodent lab tests) are applied, we find that some naturally occurring chemicals, which we consume in our food each day, are shown to be far more dangerous to our health than typically feared chemicals such as trichloroethylene (TCE). For example, if the same testing standards are applied to eating an apple, which contains the naturally occurring rodent carcinogen caffeic acid, and to drinking one liter of well water containing 267 ppb of TCE, another rodent carcinogen, the results indicate that the apple is 1000 times more carcinogenic than the liter of TCE water. Yet the drinking water standard for TCE is 5ppb. Other studies most likely exist to refute this one, and new studies are coming out every year which confuse our conventional wisdom about the risks with which we are all faced.

What does all of this mean? The science on chemical effects on humans is still being developed. The science currently does not exist to make concrete assertions about the health effects of living near a hazardous waste site, and this causes much confusion. Because the science is not fully developed, communities often are faced with dueling experts each claiming to have the final answer on the risks of a particular chemical or situation. In terms of hazardous waste sites, this ambiguity leads to frustration and heightened fear, as well as a loss of trust in government officials on the part of communities.

The problem caused by the uncertainty in the risks posed by Superfund sites is compounded by information that is relayed to a community by poor risk communicators. In "Risk Analysis and Management," (*Scientific American*, 7/93), M. Granger Morgan provides some insight into the need for involved citizens as part of better risk communication. Morgan states, "If public bodies are to make good decisions about regulating potential hazards, citizens must be well-informed. The alternative of entrusting policy to panels of experts behind closed doors has proved a failure . . .". Morgan believes that traditional concerns about providing specific information to citizens are unfounded. He states "My experience . . . indicate[s] that the public can be very sensible about risk when companies, regulators and other institutions give it the opportunity." The opportunity simply is not being given to many communities at Superfund sites. This, in sum, is the backdrop against which EPA's community relations program is undertaken.

Ideally, EPA's community relations program will facilitate the implementation of the cleanup process. However, the difficulty involved in this task needs to be understood. Not only is the program (and its ambassadors, the CRCs) required to operate in a context of scientific uncertainty, it also is expected to be the linchpin in a complex process. This process includes extensive technical issues involving many different environmental, legal and enforcement constraints, PRPs representing different positions, elected officials, and the media, to name a few. In essence, the CRCs are expected to manage the information so that all interested parties are satisfied. With so much responsibility and involvement with different entities it is ironic, that the CRCs tend to be at the lowest end of the EPA totem pole.

Nonetheless, EPA's community relations program has proven to be helpful to many communities with the cleanup of some sites and we have worked with some excellent CRCs. Overall, EPA is adequately implementing many of the areas important to the community relations program, such as distributing fact sheets and preparing community relations plans. However, similar to most government programs, some improvements need to be made.

EPA is required by the National Contingency Plan (NCP), CERCLA, and internal guidelines to perform certain community relations activities at Superfund sites. According to EPA's 1992 *Community Relations Handbook*, the purpose of these activities is to: provide the public with the opportunity to express comments on and provide input to technical decisions; inform the public of planned or ongoing actions; and identify and resolve conflicts.

We have found this program to benefit communities in the following ways:

1. The EPA community relations program gives communities access to information. Communities are always more comfortable when information is shared with them.
2. Citizens have the opportunity to make formal comments on cleanup decisions at a public meeting and during a formal comment period.
3. Citizens have the opportunity to meet directly with EPA staff or contractors to provide input and to have questions answered.
4. Citizens have access to funding through the TAG program to hire experts on technical matters related to site cleanups.

Unfortunately, these benefits are not enough.

Because of our experience with hazardous waste site cleanups, we can offer comments and suggestions from the internal perspective of RPMs and CRCs in almost every region of the country, as well as from the external perspective of community members and PRPs. Generally, we have found that from the standpoint of many RPMs and CRCs, citizens do not understand the technical nature of the cleanups, and they make demands that slow the cleanup process. Also, some think that community members can be difficult and sometimes abusive (which they can be) and that basically the community only impedes the cleanup. These RPMs and CRCs have little or no interest in working with citizens. Finally, RPMs and CRCs find the communities' demands for their time impossible to satisfy.

From the standpoint of many community members, the community relations program does not allow them to participate fully in the process. As other studies have pointed out, citizens believe they do not have the information they need, and their concerns are not being represented. Frequently the community does not understand what is happening. Many communities feel left out of the process when EPA, the state environmental agency, and the PRPs meet to decide site-related issues that may have a direct effect on that community. Community frustration is compounded by experts presenting opposing views on site-related scientific matters and by the length of time a cleanup takes.

From the standpoint of PRPs, many feel that the community only slows down the cleanup process, they do not understand the technical nature of a cleanup, and they make unrealistic demands on both EPA and PRPs.

We agree with EPA's approach to improving community participation as outlined in the June 23, 1993 report, "Superfund Administrative Improvements", which called for early and more effective community involvement. We also look forward to the results of the National Advisory Council for Environmental Policy and Technology's conference working group on participation of local communities.

We have listed below some of the areas in need of improvement and we have proposed some solutions. We have noted whether we think the solutions would require administrative or legislative changes. (We also have attached a chart which breaks out the proposed solutions by legislative and administrative changes.) Some of these areas have been addressed to a certain extent over the past several years by different organizations. However, we still felt its useful to comment on those areas in addition to new areas that have not been fully addressed in the past. The issues discussed below are based on our site specific experience and on interviews with citizens, local elected officials, EPA staff, and environmental groups held in preparation for this testimony.

II. Issues and Solutions

ISSUE 1: LOW EMPHASIS ON QUALITY

In order to fix any problem, it is essential to address its root before addressing any other aspect of the issue. In the case of the Superfund community relations program, we believe that the fundamental problem lies in the quality of the staff who implement the program. Insufficient emphasis is placed on staffing the program with people who are qualified for the jobs and on providing substantive support and training for them.

Mr. Chairman, I think you would agree that the success of ADP, the company you founded, was a direct result of the quality of the people and services provided. If ADP's service had been poor, then no amount of additional capital or staff would have made the company a success. Similarly, without quality staff at EPA, no amount of innovative programs, additional staff, or funds will solve the problem. In fact, additional staff resources and programs will only exacerbate an already chronic problem. We believe the citizen-customer deserves quality service from the government. A quality staff will lead to quality service. Once well trained staff are in place, then innovative programs and additional resources would improve the program that much more.

We have dealt with a wide variety of CRCs in almost every EPA region of the country. We have worked with several excellent CRCs at these sites. For the most part, however, we have found that overall most CRCs are not equipped to perform their jobs suitably and most communities are disappointed with the CRCs. Many of the CRCs with whom we work are not properly trained, not suited to the job, and are generally underqualified for the difficult task of risk communication.

I have two examples that I would like to share with you. The first example involves a CRC who was formerly an historian with a small government program. The program was eliminated, but because he was a career government employee, he was transferred to another position that was open, a CRC slot. Clearly, this person has

no training or qualifications to be a CRC. Indeed he has done a poor job at the two sites on which we have worked with him.

A second example involves a CRC who has been with the program for approximately 12 years. At a recent public meeting, the CRC acted as though he were a talk show host going into the audience to incite controversy. The CRC even went so far as to encourage the citizens to challenge the assertions that the RPM was making about health and safety issues at the site. The immediate result of both of these examples is citizens asking that the CRC be removed from the site. I can only speculate about the long term impact of their activities in terms of damaging EPA's credibility with those communities.

As you can imagine, Mr. Chairman, the community frustration level rises proportionally with the weaknesses of the CRCs. In addition to being overworked and poorly trained, and the subsequent insufficient quality of work, CRCs' problems primarily arise from having little authority in the Superfund program. A CRC's lack of authority and skills is problematic for four principal reasons:

1. The EPA's primary contact with communities is supposed to be through the CRCs. If the community is unsatisfied with the CRC, then EPA's image as a whole is damaged. This can undermine a community's trust in the government's handling of the site. Further, if a CRC is not qualified, the RPM frequently is pushed to undertake community relations activities, which impacts their ability to successfully manage the cleanup.

2. A poor CRC inevitably slows the Superfund process down. Often, if a CRC is not well received by the community, he or she will become less cooperative, which in turn results in citizens being less informed and feeling more left out of the process.

3. A poor CRC can undermine the whole community relations effort by antagonizing the very people with whom he or she is expected to communicate. Citizens can become angry and petulant with EPA if they do not respect or trust the CRC.

4. Finally, a CRC's inability to successfully perform his/her job results in lost opportunities for EPA to communicate its successes in the program to the public at large. CRCs could, if properly equipped, play a key role in transferring positive information to the public about progress in Superfund.

Proposed Solutions

As I stated earlier, the most important action that EPA can take is to attack the core of the problem by upgrading the quality of its CRCs. No improvements to the Superfund program will work if the existing staff are not up to the job. Further, it is important to note that an increase in quality does not take place over night.

If, after improving the quality of the CRCs, problems still exist then the next step would be to add more resources or staff. The order of these steps is important because if you increase resources without increasing the quality of the staff, then you will have wasted an investment and gained nothing.

The following are suggested solutions:

- Hire only qualified people to the job. [Administrative].
- For those currently on the job, there should be a quality review to determine which CRCs should be moved to more appropriate jobs for their skills. [Administrative].
- The remaining CRCs and the qualified new CRCs should be fully trained on community relations and risk communication. [Administrative].
- Provide funds for training. [Administrative/Legislative]. (EPA could reassign funds from within the program.)
- Where sites are particularly difficult, specialized sensitivity training should be provided to CRCs and RPMs. [Administrative/Legislative]. (EPA could reassign funds from within the program. Otherwise, new funding would be necessary.)

The sensitivity training to which I am referring is that used by medical schools to teach doctors proper bedside manners. The program involves doctors playing the role of patient, including wearing hospital gowns that open in the back, being left on a gurney in the hallway for hours, not being given information, and generally being subjected to humiliating circumstances. The idea is to put the doctor in the shoes of the patient and let him/her experience their situation. Most doctors have found this training to be enlightening. If CRCs and RPMs were put through a similar role playing scenario related to living next to a Superfund site, then they would have a better understanding of how to treat citizens. (Conversely, if citizens participated in a role playing scenario where they had to be responsive to different com-

munity members while keeping all other interested parties happy, then they too would have a better understanding of how complex the process is and would likely make fewer demands on the system.) The point here is the need to understand each other's perspectives in order to work together more effectively.

ISSUE 2: RPMS NOT TRAINED IN COMMUNITY RELATIONS

Often, RPMs undertake the community relations work at sites with or without help from CRCs. Strictly defined, the job of an RPM would not require community relations skills. Typically, the RPM possesses strong technical skills, since that is their main purview. However, as previously described, RPMs are frequently required to step outside of the job for which they were hired to address community relations issues. This can detract from their job and potentially damage the agency's overall community relations efforts.

The division between capabilities and skills of the RPMs and the CRCs is often starkly revealed at public meetings. In these situations, an RPMs lack of training in risk communication can prevent them from responding effectively to citizens' concerns. On the other hand, CRCs can appear uninformed when they continually defer to the RPMs for answers to the citizens' questions.

Proposed Solutions

- Provide community relations/risk communication training to RPMs. [Administrative].
- Increase the authority and role of the CRCs so that RPMs do not have to undertake community relations work. As a back up, RPMs should receive community relations training. [Administrative].

ISSUE 3: NO AUTHORITY FOR CRCS

The absence of significant authority and stature for CRCs precludes them from reaching the level of effectiveness necessary at most sites. We have heard many times from CRCs that they are the low man on the totem pole and have little, if any, clout at EPA. CRCs have little opportunity in site-related decision-making, even though they are supposed to be the main contact with the community. They are rarely included in meetings with the technical, legal, and policy staff on the site. As a result they rarely have complete and/or up-to-date information about their site.

Proposed Solution

- Integrate CRCs more fully into the cleanup process and the EPA team. This will ensure that they are fully up to speed with the issues at the site and that they have the authority to be an effective liaison between EPA, the community, and the PRPs. [Administrative].

ISSUE 4: PUBLIC MEETINGS ARE NOT EFFECTIVE

The public meeting tends to be the defining moment for a community relations program. Concerns about health and safety usually make citizens very spirited at public meetings. Further, the public meeting is usually the focal point for citizens' groups and activists to raise their concerns. To have a constructive public meeting where all citizens can be heard, the meeting must be controlled by the CRC or RPM. Often, RPMs and CRCs are not up to the challenge. Specifically, CRCs are not well prepared and do not always have or understand the technical information. CRCs are not always prepared to respond to questions, particularly from the occasional citizen who is familiar with site-related technical issues. Also, CRCs have virtually no role in a public meeting except as a moderator. CRCs seldom have any substantive knowledge useful to the community.

I would like to mention one recent example. At a public meeting where groundwater issues were being discussed, the RPM and CRC's handling of citizens' questions had the opposite from the desired effect. Citizens left the meeting with more questions and uncertainty than when the meeting began. If the meeting had been handled properly, EPA could have gained some positive ground with the community.

Proposed Solutions

- Require that all public meetings offer a performance review questionnaire for attendees to fill out. The questionnaire would be reviewed by the managers in the regions who oversee RPMs and CRCs. This questionnaire will help determine areas of the public meeting that need improvement, what community

issues need to be more thoroughly addressed, and whether further training is necessary for CRCs and RPMs. [Administrative/Legislative].

• Provide specific training for CRCs and RPMs on running public meetings and responding to citizen comments. [Administrative/Legislative]. (EPA could reassign funds from within the program. Otherwise, new funding would be necessary.)

ISSUE 5: RISK COMMUNICATIONS NEED IMPROVEMENT

The public's perception of the risk from hazardous waste sites is a driving factor in many communities' acceptance of EPA's activities at a site. Clearly, this applies to a community's ultimate acceptance of the remedy for a site. The task of effectively communicating about risk, therefore, is a crucial component in the effectiveness of any community relations effort. Without sound risk communications, the progress of a cleanup can be impeded significantly. If citizens do not receive sound risk information, they can become unnecessarily frustrated and concerned. Not only can this result in extended, costly cleanups, but it can lead to litigation as well.

I will share two examples that demonstrate the adverse impact poor risk communications can have at a site. One site in Region III poses little, if any, risk to the community because of the situation at the site and it is surrounded by a fence. However, a group in the community is insistent that the risk from the site requires that the soils be dug up and removed immediately. This group is working actively to pressure EPA, resulting in a contentious and prolonged cleanup. Conversely, live munitions containing nerve gas were being removed at another hazardous waste site and citizens who had been evacuated were sneaking back into their homes. They were angry about being evacuated and felt that it was their right to take the risk if they so chose.

Both of these situations could have been avoided through proper risk communications. However, EPA's community relations efforts do not use sound risk communication practices consistently across sites. Primarily, this is because RPMs and CRCs are not sufficiently trained in this area. If the quality of EPA's risk communication were improved, citizens would likely have a much more realistic understanding of the risk from sites in their neighborhoods, and the process would move forward more rationally, more cost-effectively, and with much greater responsiveness to citizens' needs.

Proposed Solutions

• CRCs and RPMs should be trained to use risk communication skills when explaining site-related issues to citizens. [Administrative]. (EPA could reassign funds from within the program. Otherwise, new funding would be necessary.)

• Information regarding the Superfund law and process as well as technical information should be distributed to citizens to help relieve their frustration and subsequent potential anger. [Administrative].

• EPA should provide citizens with a better understanding up front of the technical and practical nature of cleanups, using understandable language and comparisons to which they can relate. [Administrative].

• Hold semi-annual risk communication seminars for CRCs and RPMs. [Administrative/Legislative]. (EPA could reassign funds from within the program. Otherwise, new funding would be necessary.)

ISSUE 6: UNREALISTIC EXPECTATIONS

The structure of the community relations program results in a high level of expectation on the part of citizens. The root of this problem lies in the differing interpretations of participation. In the cover letter to EPA's *1992 Superfund Community Relations Handbook*, Henry Longest, Director, Office of Emergency and Remedial Response, states that "Superfund is committed to involving citizens in the hazardous cleanup process." He continues to say that "our community relations effort is based on two-way communications not only to keep citizens informed about site progress, but also to give them [the] opportunity to provide input into site decisions." In reality, as it is set up currently, the program is actually more of a public information program than a public participation program. At the same time, citizens interpret "involvement" and "participation" as anything from getting information to making the final decisions about a remedy. EPA generally views involvement as citizens having the opportunity to provide input which will be taken into consideration during decision making. By using the words participation and involvement, when they have different meanings to different people, EPA can doom a community relations effort to failure from the outset.

Naturally, citizens want to be at the table when decisions about their communities are being made. It is not surprising that they feel they should have the ultimate decision-making authority when they subjectively feel most directly impacted by that decision. When citizens believe they are unfairly left out of the process, they can become very antagonistic, often slowing down the process. Further, when citizens realize their comments may not change a cleanup remedy they are disappointed, sometimes bitterly, and can become obstructive to the Superfund process. As one RPM said unfortunately, "environmental decisions can't always be made by popular decision." This citizen disappointment can be directed against EPA for either a remedy that does too little or does too much. For example, at the Smuggler Mountain site in Colorado, the community did not believe that the risk from the site warranted the disruption and potential increased risk that would be caused by EPA's proposed cleanup. Therefore the community pressured EPA to postpone their decision on remediation.

In addition to having unrealistic expectations about their ability to affect the decision-making process, citizens frequently have unrealistic expectations about what environmental cleanups can achieve, the length of time these cleanups will require, and what kind of input they will have throughout the process. At a site in Region III, a local environmentalist group, which received the TAG, was confused about why EPA did not solicit their input prior to a public meeting. The environmentalist group felt that EPA should have encouraged more of their participation. Finally, many citizens have commented that it would be helpful to them if EPA explained issues such as the capabilities of existing technology, the steps involved in cleanups, and the expected length of time for the cleanup.

We believe that public participation means giving the community a "seat at the table" so that their views and concerns are considered as a part of the decision making process. However, EPA should continue to make the final decisions about the remediation of a site once all of the scientific data, citizen concerns and PRP views have been analyzed.

Proposed Solutions

- Better define the mandate of the community relations program and what participation actually means. [Legislative/Administrative].
- Set up a system to ensure that the community has a clear understanding of what involvement/participation means. [Administrative].
- If EPA's definition of public participation does not lend itself to true involvement as the public may view it, then rename the program as a public information program. [Administrative].

ISSUE 7: LOW UNDERSTANDING OF COMMUNITY'S NEEDS

EPA is hampered by its inability to adequately determine the views and needs of communities at these sites. Although the NCP requires EPA to conduct interviews with local officials, public interest groups, citizens, and other interested parties, these interviews often are minimal or not performed at all. Often a disproportionate level of effort is directed at a small number of activists at a site. We have found that these activists often do not represent the majority of the community.

At one site in Region III, EPA has devoted an extensive amount of attention to the small number of community members who constitute the concerned citizens group and allegedly represent the community. The group is extremely vocal and makes aggressive demands of EPA, calling frequently on state and federal elected officials to support their cause. Although EPA recognizes that the group does not have the support of the community, it must still respond. Since the majority of the community is not commenting and/or making any noise, EPA has to recognize this group by default. If EPA had stronger guidance on how to determine "the community", it might be able to avoid similar situations.

By understanding the needs and desires of the majority of citizens, EPA can approach the remediation of the site in a manner that is far more beneficial for the community. For example, some communities want to see their site redeveloped. Although the redevelopment of Superfund sites is relatively new, EPA could possibly take a different approach to the cleanup if it was aware of the community's desire for redevelopment. We are working on a site where this is the case. Through much work with the PRPs and EPA, the community is working on getting flexibility in the Remedial Investigation/Feasibility Study (RI/FS) so that redevelopment of the site can proceed prior to completion of the cleanup. In this particular case, the PRP paid for a structural engineering study for the community in order to assist the community in determining the feasibility of redevelopment.

A good information exchange can result in changes that benefit a community in other smaller ways. For example, at a Region V site, a community group expressed concerns with emergency planning by the PRPs. In response, the PRPs increased the emergency procedures at an additional cost even though this increase was not required by the EPA.

Proposed Solutions

- Reinvigorate the requirement of interaction with a broad base of community leaders. [Administrative].
- Evaluate ways to more thoroughly assess what community members know about Superfund and site-related issues. Tailor community relations plans to meet the needs identified. [Administrative].
- EPA should provide specific criteria for ensuring that information exchange takes place and measuring community concerns. [Administrative].

ISSUE 8: NO DEFINITION OF COMMUNITY ACCEPTANCE AS "MODIFYING CRITERIA"

The NCP lists community acceptance as one of nine modifying criteria in remedy selection. Yet, as others have previously recognized, community acceptance is not defined, causing citizens to have varying expectations of what their input means. When citizens feel this way, they frequently resort to political means to promote their position. Not only does the absence of a definition exacerbate citizen's frustration with the process, it also subjects EPA to charges of bias or a lack of responsiveness. Further, EPA frequently is unable, due to the absence of definite criteria for community acceptance, to support its position on remedial decisions. Clearly, this not only causes problems for communities, but for EPA as well, since it often slows the pace of cleanup. Ironically, the delay in cleanup is frequently citizens' most vocal complaint about Superfund.

Proposed Solution

- EPA should define community acceptance as it relates to the criteria for remedy selection. [Administrative/Legislative].

ISSUE 9: PROGRAM UNDERSTAFFED/HIGH STAFF TURNOVER

Citizens complain about the high turnover of both CRCs and RPMs. Another recurring concern is that staff are inaccessible. One citizen explicitly stated to us that conspiracy charges can arise when EPA does not share information. However, the realities of the program explain why this occurs. Currently, the EPA regional community relations offices are understaffed and not able to spend the time necessary to effectively work with communities. Some community relations staff are responsible for as many as 50 sites. As one RPM told us, "There are not enough resources to handle the number of [public] inquiries. More CRCs would help. RPMs have the lead, but do not have time to handle the community relations." Further, it is not realistic to expect the same staff to work on the project throughout the cleanup since an average site can take ten years to clean up.

Proposed Solution

- Determine the average length of time CRCs (and RPMs) work on the same site. If the length of time is shorter than the average length of time other EPA personnel change jobs, then the problem needs to be further addressed. It may only be, however, that citizens' expectations need to be set more realistically. [Administrative].
- EPA should proactively inform the affected community when staff changes occur. [Administrative].
- Develop innovative approaches to increase staff availability, such as allocating specific times for citizens to call. [Administrative].

ISSUE 10: INVOLVEMENT OF THE AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY (ATSDR)

ATSDR is required to perform public health assessments of all NPL sites. Citizens and federal, state, and local environmental and health agencies also may request ATSDR's assessments in writing. These evaluations usually consist of a site visit to gather health and environmental data. ATSDR determines on the basis of the site visit if a health assessment is necessary. The number of requests for these assessments has been steadily increasing, and it is expected that ATSDR will become increasingly involved at hazardous waste site cleanups.

The interaction between ATSDR and EPA at these sites is potentially a very sensitive issue in terms of community relations. According to ATSDR, "the community

has a key role to play in a Public Health Assessment and any activity that may follow...Health concerns are addressed in every Public Health Assessment for every site." However, ATSDR's activities are designed only to inform and solicit comments from individuals. Similar to EPA's community relations program, there are no criteria for evaluating community concerns. Citizens who expect that their concerns will be addressed in a particular way may become frustrated by ATSDR's efforts. The potential exists for ATSDR's efforts to serve only as another source of confusing, possibly conflicting expert data regarding the health and safety of individuals living near the sites.

The interrelationship between EPA's requirement to protect the public health and the environment through remedial activities and ATSDR's responsibility to assess public health issues needs to be analyzed carefully. As the programs are structured currently, no clear definition exists as to their relationship. At one site, for example, citizens have been frustrated by ATSDR's indication that it had no authority to respond to their request to comment on the potential public health impacts of alternative remedies. Again, the result of this kind of situation is community distrust of all officials involved in selecting and overseeing the remedy for a site.

Proposed Solutions

- EPA should notify communities at an early stage about ATSDR and its responsibilities. [Legislative].
- EPA should determine whether it is feasible to incorporate ATSDR findings into its community relations efforts to ensure that citizens are fully aware of them. [Administrative].
- Clarify the interrelationship between EPA's requirement to protect public health and the environment and ATSDR's responsibility to assess public health issues. [Legislative].

ISSUE 11: CITIZENS GET DATA LATE

Important technical and non-technical information frequently is received too late in the remedial process to satisfy citizens' needs. This results in increased concerns because citizens feel that they are being kept in the dark. This is particularly true, we have found, for site investigations. Communities are extremely interested to see the results of these investigations, since the results are the first hard piece of information that may have been generated. EPA often is slow to release this information, thus initiating the communication process with a distrust between the community and EPA that is often irrevocable.

Under CERCLA, the first information that EPA is required to provide to citizens is the FS. This document is usually completed two to three years after the site is placed on the NPL. Therefore, citizens are not officially brought into the process until just prior to the Proposed Remedial Action Plan (PRAP) for the site. For many citizens, this is insufficient.

Proposed Solutions

- Release all site investigatory studies, particularly on or near the property of the citizens, as soon as practicable. If a study cannot be released, then the RPM or CRC should be available to explain the process required to release the data and a range of time within which the data can be expected. [Administrative].
- Make all technical data available throughout the process. The data should be summarized in layman's terms. This applies to the RI in particular. [Administrative].
- At sites where the RI/FS is delayed, EPA should be required to hold a public informational meeting at least once a year and provide a complete updated status report every six months. [Legislative].
- At the outset of the process, EPA should work with citizens in the community to solicit suggestions on what information should be contained in status reports. EPA should explain the basis for any of its decisions not to include information suggested by citizens. [Administrative].
- Ask the community to nominate one local official to serve as the point of contact for disseminating information to the community. [Administrative].

III. Technical Assistance Grants

Another area within EPA's community relations program that needs improvement is the Technical Assistance Grants program, or TAG. As you know, under section 117(e) of CERCLA, up to $50,000 is made available to communities at Superfund sites. The intent of the program is to allow communities to keep citizens informed of

site-related activities by hiring technical advisors to interpret and comment on technical aspects of the cleanup. Currently, the TAG can be awarded once the RI/FS process has started. According to a November 1992 U.S. General Accounting Office study "EPA's Superfund TAG Program", there has been limited use of TAGs with communities. The study found that communities were not making use of TAGs because the application is lengthy and prohibitive and the procurement procedures make it difficult to hire an advisor.

In theory, the TAG program is a much-needed tool for communities to become better educated on technical issues involving the site, thereby facilitating the Superfund process. Although I understand that much TAG money is used for its intended purposes, my personal experience tells me there are some serious problems with the program.

I would like to suggest that, as an enhancement to the current TAG program, a new program be set up whereby some TAG money is provided to Regional Community Councils (RCC) made up of citizens with experience at Superfund sites and EPA staff. The RCC would serve as a clearinghouse for local citizens groups from which to seek assistance in applying for TAGs and with how to use the TAG. The RCCs could assist communities with hiring TAG consultants and provide input into the remedy selection process. The RCCs would need to have more in-depth training on the program and technical issues involved in cleanups. Such a group would have a regional perspective in solving hazardous waste problems. The group would be responsible for, in a sense, helping to prioritize and evaluate issues at sites across regions. Communities would be more likely to trust such a regional group since it would be made up of other citizens facing cleanups. Legislation would be required to enact this program.

Essentially this would be a grassroots program where citizens would be helping each other. The cleanup of sites is a national problem, and involving citizens on a more regional approach may lend itself to more creative and productive exchanges of ideas between citizens, EPA and PRPs.

In the event that EPA chooses to maintain its current program structure, I have highlighted some of the current problems with the TAG program and some proposed solutions.

ISSUE 1: LITTLE GUIDANCE ON HOW TO USE GRANT

There is little guidance on how best to use the grant money, other than how to comply with administrative requirements. In some cases, EPA encourages the community to obtain a grant as a way to deflect criticism of its own community relations program weaknesses. This is not helpful if citizens do not know how to use the grant. At a site in Michigan, the group responsible for the TAG was confused about the best way to use the money and sought guidance from my company. Further, TAG consultants themselves frequently require additional guidance from EPA. At a site in Virginia, the TAG consultant asked EIM to write the newsletter for him because he did not know what to write. Clearly, without sufficient guidance, the potential for wasted funds and less benefit to the community exists.

Proposed Solutions

- CRCs should work with community members to ensure that they understand the purpose of the TAG and have a clear understanding of how to use the grant. [Administrative].
- Hold regional workshops for communities with TAGs to discuss different issues and approaches. [Administrative].

ISSUE 2: RAISED EXPECTATIONS

Initially, the TAG program tends to increase citizens' expectations about the weight of their input into the process. Many citizens believe that comments of the TAG consultant will receive priority in EPA's decision making process. However, the TAG alone is not a sufficient tool for a community to grasp the many complexities of most site cleanups. When these expectations are not met, citizens become frustrated and motivated more strongly to obstruct EPA. We have seen that the TAG consultants also become frustrated, which in turn can feed the community's overall frustration with the program.

Proposed Solutions

- At the outset, define thoroughly the purpose and role of the TAG program. Provide examples of what is and is not appropriate to expect from the TAG. [Administrative].

• CRCs should meet with the TAG consultant to review questions about the site. [Administrative].

ISSUE 3: USE BY INTEREST GROUPS NOT REPRESENTATIVE OF THE COMMUNITY

Another problem with the TAG program is that EPA has no way of evaluating how accurately the group applying for a TAG represents the community. This can lead to specialized interest groups, who frequently take the lead in fighting for what they say is best for the community, obtaining the TAG because they are the most motivated. Upon further examination, it is apparent that some groups have their own personal agendas, which are not representative of, nor do they necessarily benefit the community.

Proposed Solutions

• Develop procedures for ensuring that the TAG benefits the majority of the community. [Administrative].

• Establish procedures for EPA to evaluate if TAG is being used by groups that do not represent the community and ways to reassign the grant, if necessary. [Administrative].

ISSUE 4: SIZE AND ADMINISTRATION OF THE GRANT

$50,000 is the standard amount of money provided under the TAG. Although exceptions to the size of the grant can be made, $50,000 is a relatively small amount of money in light of the volume of data that must be digested by a consultant. Often this results in the hiring of inexperienced experts who can produce second rate work and biased opinions. As a result, the cleanup process is made that much more complex and citizens' confusion about the best approach for a site increases.

As indicated in various studies, many citizens and TAG consultants are not happy with the TAG because they find the administrative procedures to be excessive. In addition, EPA is criticized for being slow to reimburse TAG consultants, which is particularly difficult for small companies. These factors decrease the benefits provided to communities from the TAG and causes citizens and consultants to lose interest. At one site in Region III where EPA actively promoted the application for a TAG, the consultant told us that he was considering resigning because he was unable to procure timely payment or information from the region.

Proposed Solutions

• Develop system to provide incentives to attract high quality contractors. [Administrative].

• Create a pool of high quality TAG consultants who can provide services to communities for a reasonable price. [Administrative].

• Increase the size of the grant. [Legislative].

• Simplify administrative requirements for citizens with grants. [Administrative/Legislative].

ISSUE 5: GRANTS OFFERED TOO LATE

Although citizens may apply for a TAG when the site is listed on the NPL , they cannot receive funding until late in the process leaving citizens out of the information exchange prior to the RI/FS. Because many technical issues are discussed before the RI/FS, citizens should be able to receive TAG money as soon as possible after the site has been put on the NPL.

Proposed Solution

• Grant TAGs earlier in the process. [Legislative].

ISSUE 6: MISUSE OF TAG FUNDS

Regretfully, TAG funds are subject to misuse. At a site in Region III, TAG money was managed by plaintiffs in a toxic tort litigation against a PRP at the site. The TAG consultant hired provided assistance with the litigation which is (clearly) not legal. The same consultant later was named as an expert witness by the plaintiffs. The PRP reported this to the EPA Inspector General for action. Even though EPA regulations prevent use of TAG funds in litigation, no action was taken apparently because EPA was reluctant to subject itself to the group's claims that EPA was not being responsive, or was being unfair, to the community. This example shows the absence of guidance in the use as well as oversight of TAGs. Further, the community that was supposed to benefit from the use of the TAG funds was, in a sense, cheated.

Proposed Solutions

- Improve oversight of TAG funds. [Administrative].
- Strengthen definitions of appropriate use of funds. [Administrative/Legislative].
- Prohibit TAG consultants from serving as expert witnesses in private party litigation involving a site. [Legislative].

V. CONCLUSION

Mr. Chairman, let me conclude by saying that EPA has had to create a nationwide community relations operation in a relatively short period of time. Further, EPA staff involved in Superfund remedial and community relations staff are faced with an enormous task. It is only natural that there would be a need for adjustments in the program, particularly since the number of Superfund sites is over 1200 and growing fast. Nevertheless, I would recommend that before considering any major restructuring of the program or budget increases for the community relations program, the top priority should be to improve the overall quality of the people involved in community relations and thus their ability to run the program. All other improvements would be short-lived or wasted until the quality issue is addressed.

I understand that this Subcommittee will be considering many other Superfund issues that may take priority over improving the quality of the community relations program. However, I would suggest that few other areas in Superfund that would have a greater, and more direct impact on those constituents of yours who live on or near Superfund sites. Further, I do believe that helping citizens better understand these issues and their relationship to the process will increase the program's efficiency and expedite the cleanup of these sites.

Thank you, Mr. Chairman, Senator Chafee, and members of the Subcommittee for allowing me this opportunity to share my views and experiences with you.

PROPOSED ADMINISTRATIVE AND LEGISLATIVE SOLUTIONS
EPA COMMUNITY RELATIONS PROGRAM

ISSUE	ADMINISTRATIVE	LEGISLATIVE	ADMINISTRATIVE/LEGISLATIVE
QUALITY:			
• Hire only qualified people.	X		
• Determine if current CRCs should be moved to more appropriate jobs for their skills.	X		
• Train new and existing CRCs on community relations and risk communication.	X		
• Provide funds for training.			X
• Provide specialized sensitivity training to CRCs and RPMs at difficult sites.			X
RPMS NOT TRAINED IN COMMUNITY RELATIONS:			
• Provide community relations/risk communication training to RPMs.	X		
• Increase the authority and role of the CRCs.	X		
NO AUTHORITY FOR CRCs:			
• Integrate CRCs more fully into the cleanup process and the EPA team.	X		
PUBLIC MEETINGS ARE NOT EFFECTIVE			
• Require that all public meetings offer a performance review questionnaire for attendees to fill out to help determine ways to improve public meetings.			X
• Provide specific training for CRCs and RPMs on running public meetings and responding to citizen comments.			X

ISSUE	ADMINISTRATIVE	LEGISLATIVE	ADMINISTRATIVE/LEGISLATIVE
RISK COMMUNICATIONS NEED IMPROVEMENT:			
• Train CRCs and RPMs in risk communication skills.	X		
• Distribute to citizens information regarding the Superfund law and process as well as technical information.	X		
• Provide citizens with a better understanding up front of the technical and practical nature of cleanups, using understandable language and comparisons to which they can relate.	X		
• Semi-annual risk communication seminars for CRCs and RPMs.			X
UNREALISTIC EXPECTATIONS:			
• Better define the mandate of the community relations program and what participation actually means.			X
• Set up a system to ensure that the community has a clear understanding of what involvement/participation means.	X		
• If EPA's definition of public participation does not lend itself to true involvement as the public may view it, then rename the program as a public information program.	X		

ISSUE	ADMINISTRATIVE	LEGISLATIVE	ADMINISTRATIVE/LEGISLATIVE
LOW UNDERSTANDING OF COMMUNITY'S NEEDS:			
• Reinvigorate the requirement of interaction with a broad base of community leaders.	X		
• Evaluate ways to more thoroughly assess what community members know about Superfund and site-related issues and tailor community relations plans accordingly.	X		
• Provide specific criteria for ensuring that information exchange takes place and for measuring community concerns.	X		
NO DEFINITION OF COMMUNITY ACCEPTANCE AS "MODIFYING CRITERIA":			
• Define community acceptance as it relates to the criteria for remedy selection.			X
PROGRAM UNDERSTAFFED/HIGH STAFF TURNOVER:			
• Determine the average length of time CRCs (and RPMs) work on the same site and address any problems if necessary.	X		
• Proactively inform the affected community when staff changes occur.	X		
• Develop innovative approaches to increase staff availability.	X		

ISSUE	ADMINISTRATIVE	LEGISLATIVE	ADMINISTRATIVE/LEGISLATIVE
INVOLVEMENT OF THE AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY (ATSDR):			
• Notify communities at an early stage of ATSDR and its responsibilities.		X	
• Determine feasibility of incorporating ATSDR findings into its community relations efforts.	X		
• Clarify the interrelationship between EPA's requirement to protect public health and the environment and ATSDR's responsibility to assess public health issues.		X	
CITIZENS GET DATA LATE:			
• Release all site investigatory studies as soon as practicable or explain the process required to release the data and a range of time within which the data can be expected.	X		
• Make all technical data available throughout the process. The data should be summarized in layman's terms.	X		
• At sites where the RI/FS is delayed, EPA should be required to hold a public informational meeting at least once a year and provide a complete updated status report every six months.		X	
• Early in the process, work with citizens to solicit suggestions on what information should be contained in status reports. EPA should explain the basis for any of its decisions not to include information suggested by citizens.	X		
• Ask the community to nominate one local official to serve as the point of contact for disseminating information to the community.	X		

PROPOSED ADMINISTRATIVE AND LEGISLATIVE SOLUTIONS
EPA TECHNICAL ASSISTANCE GRANT PROGRAM

ISSUE	ADMINISTRATIVE	LEGISLATIVE	ADMINISTRATIVE/LEGISLATIVE
CREATE ALTERNATE PROGRAM • Create a program whereby some TAG money is provided to Regional Community Councils made up of citizens with experience at Superfund sites and EPA staff.		X	
LITTLE GUIDANCE ON HOW TO USE GRANT: • CRCs should work with community members to ensure that they understand the purpose of the TAG and have a clear understanding of how to use the grant. • Hold regional workshops for communities with TAGs to discuss different issues and approaches.	X X		
RAISED EXPECTATIONS: • At the outset, define thoroughly the purpose and role of the TAG program. • CRCs should meet with the TAG consultant to review questions about the site.	X X		
USE BY INTEREST GROUPS NOT REPRESENTATIVE OF THE COMMUNITY: • Develop procedures for ensuring that the TAG benefits the majority of the community. • Establish procedures for EPA to evaluate if TAG is being used by groups that do not represent the community and ways to reassign the grant, if necessary.	X X		

ISSUE	ADMINISTRATIVE	LEGISLATIVE	ADMINISTRATIVE/LEGISLATIVE
SIZE AND ADMINISTRATION OF THE GRANT:			
• Develop system to provide incentives to attract high quality contractors.	X		
• Create a pool of high quality TAG consultants who can provide services to communities for a reasonable price.	X		
• Increase the size of the grant.		X	
• Simplify administrative requirements for citizens with grants.			X
GRANTS OFFERED TOO LATE:			
• Grant TAGs earlier in the process.		X	
MISUSE OF TAG FUNDS:			
• Improve oversight of TAG funds.	X		
• Strengthen definitions of appropriate use of funds.			X
• Prohibit TAG consultants from serving as expert witnesses in private party litigation involving a site.		X	

Testimony of the Chemical Manufacturers Association

The Chemical Manufacturers Association (CMA) appreciates the efforts of Chairman Lautenberg and the Members of the Superfund, Recycling and Solid Waste Management Subcommittee in holding hearings on the state role and local public involvement in Superfund. CMA welcomes the opportunity to submit this statement for the record.

CMA is a nonprofit trade association whose member companies represent more than 90 percent of the productive capacity for basic industrial chemicals in the United States. Incidental to the manufacture of these chemicals, CMA member companies generate and manage hazardous and non-hazardous wastes. Thus, many of our member companies have been deeply involved in the Superfund program since its inception.

This statement first addresses the general benefits that may be, realized by an expanded state role in the Superfund process. It then highlights the need for a single master with decision-making authority at each site. It also addresses the need for local public participation in the Superfund program. Finally, this statement emphasizes that while reform to the state/federal relationship at sites is needed, it will not address the fundamental problems of the Superfund program—the current remedy selection and liability allocation processes.

INTRODUCTION

CMA is generally not opposed to greater involvement by the states in the Superfund process. In fact, we recognize that there are certain advantages to providing the states with an expanded role. States are not only positioned geographically closer to sites but are also typically more visible in the community, and thus more politically accountable than EPA. However, our full support of a greater State role would depend 011 the specifics of such an expansion.

In order for an expanded state role to have any meaningful impact on the Superfund process, it must be accompanied by the designation of one and only one "master" for each cleanup. Neither the public nor Potentially Responsible Parties (PRPs) benefit when federal and state officials disagree about what needs to be accomplished and then try to change the rules in the middle of the game. Moreover, reform of the remedy selection process and the current liability scheme must also occur if the Superfund program is ever to achieve it's goal of cleaning up the nations abandoned waste sites in an expeditious manner.

EXPANSION OF THE STATE ROLE IN THE SUPERFUND PROGRAM

When the Comprehensive Environmental Compensation, Response and Liability Act (CERCLA) was enacted in 1980, it was not anticipated that the States would need to play a substantial role in the cleanup of the then-400 identified NPL sites. Today, almost all of the states are enforcing or funding cleanups at their own state non-NPL sites. In addition, many states are active at NPL sites where their responsibilities range from required cost sharing to lead agency for site remediation activities. This proliferation of state Superfund activity demonstrates that many states have the interest and the mechanisms in place to play-a greater role in the cleanup actions within their borders.

The federal Superfund program, as currently structured, does not use state capabilities and resources to the greatest extent possible. The program should be restructured to take better advantage of the states generally greater familiarity with individual sites, their histories, unique site conditions and surrounding geographical areas. In addition, states are better positioned to respond to local concerns than EPA, which is only indirectly accountable politically to local communities.

Considering the large number of sites that must be addressed, it is essential to make efficient use of collective federal/state resources. One possibility would be for EPA to shift away from its current role of site-specific decision-making to program oversight, funding, and technical assistance. The states could be responsible for the details of site cleanup administration. This would allow a greater number of sites to be addressed over a shorter period of time and would reserve limited federal funds for sites where states are unwilling or unable to administer the program. If state authority is increased, the roles of the federal and state governments must be clearly defined and restricted to complement—rather than conflict—with each other.

ONE MASTER SHOULD HAVE DECISION-MAKING AUTHORITY AT EACH SITE

Many problems with the remedial phase of the Superfund process are due to Superfund's overlapping state-federal administrative relationship which promotes du-

plication of effort, conflict, and delays. This situation has been characterized as having one too many "cooks in the kitchen."

For example, Superfund's use of "lead" and "support" agencies at every site can result in state and EPA staff reviewing, commenting and approving the same material to ensure that their respective laws, regulations, and standards for cleanups are met. Because of differing state and federal cleanup standards, EPA and a state may disagree over the appropriate actions to take at a contaminated site. This is true even when states are designated by EPA as the lead agency. States are required to proceed under state cleanup laws with the knowledge that EPA subsequently may decide to select and enforce its own remedy if not satisfied with a state-selected remedy. The result is wasteful duplication of effort in oversight and enforcement and lengthy disputes between EPA and state agencies about cleanup remedies and cleanup standards. This leads to a slow, expensive, and cumbersome cleanup process. Efficiency and consistency are not achieved and the maximum number of sites is not addressed.

There are too many inefficiencies in the Superfund program. Allowing these duplicative and conflicting efforts to continue will only make a bad situation worse. This situation can be resolved by the designation of *ONE* master, either the state or federal government, with decision-making authority at each site. Currently, there is no mechanism by which to make this designation. Congress could provide for a site-by-site designation or it could designate its preferred agency as a general matter but allow the other to assume control if the designated agency fails to perform.

However, CMA wishes to make clear that deference to more stringent state standards is not the answer to this problem. State standards are not always applied appropriately to cleanups. For example, states often apply drinking water standards to the cleanup of water sources that never have and never will be used as drinking water. Such misapplication of state standards leads to costly and ineffective remedies.

LOCAL PUBLIC INVOLVEMENT IN SUPERFUND

CMA believes that local public involvement at Superfund sites will make Superfund cleanups more effective, efficient, and responsive to local public concerns.

Citizens can provide valuable information about site histories and local conditions This information can be useful in identifying the best remedy for a particular site. Improved local public involvement will also increase efficiency by reducing conflict throughout the remedial process. It is our experience that local public input and information sharing is best initiated early and continued throughout the remediation process. This includes educating affected communities regarding the true risks that sites pose and the advantages and disadvantages of remediation options. A well-informed community fosters support for and confidence in cleanups. Uninformed communities are more likely to focus their. energies on blocking actions they oppose or don't understand.

CHANGES TO THE STATE ROLE MUST BE ACCOMPANIED BY REFORMS TO THE REMEDY SELECTION AND LIABILITY ALLOCATION PROCESSES

Better utilization of state resources, a clear demarcation of federal/state authority at each site, and public participation will improve the functioning of the Superfund cleanup process. However, these modifications will not address the areas of the program which are at the root of the wasteful expenditures and unnecessary delays—specifically, the current remedy selection process and the liability scheme. To date, CMA has not had the opportunity to testify before the Senate on these key issues that are in so desperate need of reform. CMA would like to take this opportunity to briefly outline some of the basic problems in these areas and to provide several suggestions for their resolution.

1. Remedy Selection

Superfund cleanups are often needlessly expensive and inefficient. Millions of dollars are spent to guard against risks that don't exist. The law leaves EPA free to spend money from the Superfund—or demand that PRPs spend their money—with little concern for the efficiency, cost-effectiveness, or relative risks of the cleanup remedies selected. Also, the statutory requirement for remediation to levels that meet "all legally applicable and relevant and appropriate requirements" (ARARS)—which were developed for process wastes with different management concerns—as well as the statutory "preference for "permanent solutions" and "treatment, impede cleanups and lead to arbitrary and wasteful remedial decisions.

The Superfund program should be reformed to identify and manage real risks, i.e. those realistically estimated risks reasonably associated with specific sites. Risk as-

sumptions should be made on a site-specific basis; account for actual or planned future land use; and recognize the limits of remedial technology. Decisions should be cost-effective and justified by risk-reduction goals.

2. Liability

Superfund's joint and several liability standard has triggered an avalanche of litigation. The gross unfairness of this standard has created monstrous problems and delays as PRPs battle in court to ensure that each party pays its fair share of cleanup costs. This has led to soaring transaction costs and near gridlock in the program.

CMA believes the liability system should be reformed to require that each liable party pay its fair share—but only its fair share—of remediation costs, and that the Superfund Trust Fund pays the orphan shares—that is, the shares of unidentified, defunct, bankrupt, or insolvent liable parties. This fair share system is not only equitable and workable, but is also consistent with the Administration's position that Superfund reforms must incorporate the "site-by-site, polluter pays concept. Moreover, the problem of a few PRPs paying for the entire cleanup would be minimized by statutorily requiring EPA to identify all PRPs At each site—not just a naming a few PRPs as is currently allowed under strict, joint and several liability. Liability would be allocated in a binding administrative process administered by independent administrative law judges.

Again, CMA has not yet had the opportunity to present to the Senate its proposals for reform of these fundamental areas of the Superfund program. We are prepared to provide a more detailed explanation of how these issues can be remedied to make the program achieve quick and effective cleanups.

CONCLUSION

Depending on how the role of the states was restructured, the Superfund program could benefit from state resources and cleanup experience. Any changes that are made to the balance of federal/state authority at sites, however must be clearly delineated in order to avoid conflicting and duplicative requirements. An important component of this delineation is the clear designation of either the state or federal government as the decision-making authority—"one master." Remedy selection and implementation can also be made more effective and efficient through greater local public participation in the program. Furthermore, the benefits of any changes to the Superfund program will not realize their potential unless they are accompanied by reform of the fundamental flaws in the remedy selection and liability allocation processes. CMA would appreciate the opportunity to present detailed testimony on its remedy selection and fair share liability proposals.

SUPERFUND REAUTHORIZATION

THURSDAY, SEPTEMBER 9, 1993

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON SUPERFUND, RECYCLING, AND
SOLID WASTE MANAGEMENT,
Washington, DC

CLEANUP STANDARDS ISSUES

The subcommittee met, pursuant to notice, at 10:04 a.m. in room 406, Dirksen Senate Office Building, Hon. Frank R. Lautenberg [chairman of the subcommittee] presiding.

Present: Senators Lautenberg, Durenberger, Smith, and Warner.

OPENING STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator LAUTENBERG. Good morning. We will call this hearing to order on the subject of reforming the Superfund clean-up process.

The subcommittee today is holding the first of two hearings on a review of the Superfund clean-up process. To assist our efforts at reform, last year I requested GAO to investigate whether sites which EPA claims have been cleaned up are really safe and what we can expect of clean-ups that have yet to be undertaken. That report, which I'm releasing today, and our two hearings this month should go to the heart of what the Superfund Program is all about: getting toxic waste sites cleaned up quickly and thoroughly.

As the subcommittee begins the process, I want to highlight some of GAO's key findings about the clean-up process. First, the good news: GAO will testify today that Superfund has been effective in cleaning up a certain subset of sites. For the 140 sites where EPA has completed work, EPA has done what it set out to do and effectively addressed those sites. But the kicker is that there are still hundreds of sites that have to be cleaned up, and they're going to be even more complicated and expensive than the ones that EPA has thus far addressed. This is partly because EPA has chosen the easy sites to clean up, the so-called low-hanging fruit, and is still working on the tougher sites. That may even make sense, but we'll hear about that from EPA's person this morning.

With so many more complicated and difficult sites on the horizon, it's even more important that we reform or review the clean-up process to see what we can collectively do to make it more effective and efficient. We'll focus on many issues in the two hearings this month that will perhaps force us to make some tough choices, questions like: Should we eliminate the statutory bias in favor of

permanent remedies because they may be too expensive, even though it means leaving contamination in the ground for future generations to deal with? Should we accept partial clean-ups where the land is being used for industrial purposes, even though perhaps it will limit our children's options on how the land may be used? Should we be a little less conservative in the assumptions we make when EPA performs a risk assessment? We'll be looking for answers to these questions and consider both administrative and legislative remedies to a process that clearly needs fixing.

I encourage a continuing dialog among the different interested groups and look forward to incorporating appropriate and perhaps major improvements to the statute when I introduce a comprehensive Superfund reform bill later in this Congress.

I'm pleased this morning that we're joined by our distinguished colleague, Senator Warner from Virginia, and would invite him, if he'd like, to make an opening comment.

OPENING STATEMENT OF HON. JOHN W. WARNER, U.S. SENATOR FROM THE COMMONWEALTH OF VIRGINIA

Senator WARNER. Thank you, Mr. Chairman. I shall be very brief. Regrettably, the defense authorization bill is on the floor, and as you know, that's one of my principal responsibilities, but I felt so strongly about the importance of these hearings, under your leadership, that I just wanted to appear this morning to make a brief observation that, one, we're fortunate, in the Senate, that you will take the initial leadership role in guiding such legislation as this committee initially feels appropriate, and I would hope that you'd go back to the word "reform"—it was used again in your last sentence there—because I do believe reform is necessary.

It seems to me that we've had now an experience curve—as you said 140-plus sites—but, there are many remaining; 35,000 were rejected, didn't even make the list; the average cost, $26 million per site, and it seems to me that the Congress has got to look at this thing in terms of, first, our overall financial situation in this country, how much money we can devote to it; and, second, individual Members will have to decide whether we'd rather have, say, 10 sites cleaned up to the point where they're protective or one site which is given every benefit and is ready to go into the wilderness designation. Maybe that's an extreme, but, I personally would favor 10 sites taken to a protective status, given the shortage of dollars today, than one site returned to when man first stepped on planet Earth and is ready to go back to wilderness.

Somewhere in there, we've got to strike a balance, and I intend to work with our distinguished Chairman and Members of the committee in achieving that balance.

I thank the Chairman.

Senator LAUTENBERG. We're delighted to have you with us and look forward to your participation as we review the matters that you've expressed concern about.

Senator Durenberger, welcome. Do you have an opening statement?

OPENING STATEMENT OF HON. DAVE DURENBERGER, U.S. SENATOR FROM THE STATE OF MINNESOTA

Senator DURENBERGER. Yes, Mr. Chairman. I apologize for being late, but I want to join with you in welcoming today's witnesses, and particularly a fellow Minnesotan, Alan Williams, from the State Attorney General's Office here.

The subject matter of today's hearing is extraordinarily difficult. The written testimony that's been submitted by our witnesses is uniformly excellent, detailed, well documented, and thought-provoking, and I doubt we'll be able to do it justice in the time that we have this morning.

As you recall, Mr. Chairman, at the time the committee marked up the RCRA bill in the last Congress, I offered an amendment on corrective action at steel facilities for consideration. I didn't push it to a vote, because the committee was not prepared to debate the issues that it raised at the time, and we're not here to talk about RCRA this morning. But the concerns reflected in the testimony that we're going to receive are the same ones that prompted my amendment for the steel industry.

The process of choosing a remedy at a Superfund site or a corrective action plan at a RCRA site, we all know, is extraordinarily cumbersome and slow. Uncertainty may hang over a business or a community for a long time while a site slowly moves through the decisionmaking pipeline of EPA or a State agency. The second problem is the extraordinary expense of some of the clean-up remedies. The millions of dollars to restore a site often outstrip the value of the property to the community or any conceivable future use. Perhaps society could make better use of these resources for other purposes. Third, in some cases, especially where significant ground water contamination has occurred, it may not be technically possible to achieve the clean-up that the law now requires. Although the process may impose a clean-up strategy like pump and treat in perpetuity, there's good reason to wonder whether an outcome called "clean-up" can ever be reached at some of these sites.

As I said when I offered the steel amendment, I convened a group of knowledgeable folks from several industries to discuss a more general solution to these problems. That group worked throughout last Fall, when it became clear that no RCRA legislation was likely to move. The group produced a set of principles to guide corrective action decisions at RCRA sites. Those principles, or something similar, may be useful in the context of Superfund.

Thank you, Mr. Chairman.

Senator LAUTENBERG. Thank you very much.

Senator Smith, welcome. What I wanted to do was move things along and restrict opening statements. We've had a couple, and I don't want to be unfair to you, Senator, so if you have something brief, please give it; if not, I'd ask you to submit it for the record.

OPENING STATEMENT OF HON. ROBERT SMITH, U.S. SENATOR FROM THE STATE OF NEW HAMPSHIRE

Senator SMITH. I'll be glad to submit my statement for the record, Mr. Chairman.

Senator LAUTENBERG. Thank you very much.

[Senator Smith's statement follows:]

PREPARED STATEMENT OF HON. ROBERT SMITH, U.S. SENATOR FROM THE STATE OF NEW HAMPSHIRE

Thank you, Mr. Chairman, for devoting two separate days of hearings on what I consider to be one of the most troublesome areas of the Superfund program and in the greatest need of change. The average cost of cleanup per site continues to skyrocket out of control, and I believe there is now a general recognition that some cost containment strategies must be implemented.

There are numerous cases across the country where the cleanup remedy that was selected does not match the actual risk present at the site. Therefore, not only do we need better risk assessment, but also more state and community involvement in the decision making process.

While I believe Congress is aware of the numerous problems that exists in the Superfund program, I hope that once the hearing process is completed, we have the courage and commitment to make substantive changes in the program. today's subject of cleanup standards and remedy selection is just one area in need of major surgery.

Senator LAUTENBERG. At this juncture, we welcome our first witnesses. We have Mr. Rich Guimond, who we see frequently here; Peter Guerrero, and Mr. Alan Williams. We don't like discriminating, but we do occasionally differentiate, so we're going to be allowing Mr. Guimond 10 minutes, because he represents EPA's view and has a fairly detailed presentation.

Is that correct?

Mr. GUIMOND. That would be fine.

Senator LAUTENBERG. That's what I was told, and I assume you folks have coordinated. Otherwise, we'll allow five minutes. We have your written submissions and have reviewed them. As Senator Durenberger said, they're very good, and we appreciate it.

So if you would, Mr. Guimond, take your 10 minutes, and we look forward to hearing from you.

STATEMENT OF RICHARD GUIMOND, ACTING ASSISTANT ADMINISTRATOR, OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE, ENVIRONMENTAL PROTECTION AGENCY

Mr. GUIMOND. Thank you, Senator. In the interest of time, I will still summarize my remarks—have the full one for the record and summarize it here.

Mr. Chairman, Members of the subcommittee, I appreciate your invitation to appear before the subcommittee today to discuss remedy selection in the Superfund Program. First, I'd like to provide some general background on the remedy selection process that EPA has established to implement the clean-up standards provisions of the current law and describe what our experience has been in implementing this process; and, second, I'll outline our efforts that we have under way to improve remedy selection under current law and regulation.

As you've already noted, Mr. Chairman, the agency is currently very much under way of taking a look, having extensive dialog on some of the ways that we might suggest some improvements to the program for your consideration during reauthorization.

In the National Contingency Plan, or what's known as the NCP, EPA establishes a process for remedy selection that focuses on a consistent approach to decisionmaking. Remedial alternatives are first reviewed to determine whether they satisfy two basic thresh-

old criteria. These are criteria which are established in the law. The requirements are, one, to protect human health and the environment; and, two, to comply with ARARs, or applicable, relevant, and appropriate requirements. Alternatives that fail to satisfy these criteria are not eligible for selection.

Next, EPA uses balancing criteria to evaluate alternatives for their cost effectiveness and to determine which one utilizes permanent solutions and treatment to the maximum extent practicable, which are the other two statutory requirements for remedy selection. Alternatives whose costs appear proportional to the overall effectiveness they afford will be considered cost effective.

EPA decides which alternative is the most appropriate solution for the site by balancing tradeoffs between options with respect to effectiveness, implementability and cost factors, as well as State and community acceptance. In determining which option is the most suitable and the most appropriate, EPA determines the degree to which permanent solutions and treatment are practicable at that site, which entails deciding what options and what portions of the site will be clear of contamination, clean-up levels to be achieved, the volume of waste to be treated, the type of treatment involved, and the amount of residuals that will have to be managed.

Three specific areas affecting remedy selection I'd like to discuss in more detail today. These are permanence, ARARs, and risk assessments.

In interpreting the law's mandate to use permanent solutions and treatment to the maximum extent practicable, as well as its preference for treatment, EPA balanced the high cost of treatment and the requirement to select cost effective remedies with the uncertainties associated with containment of highly mobile, highly toxic materials. As a result, the NCP focuses on treatment of the most hazardous materials on the site, those that comprise the principal threats, while allowing containment of materials that pose a relatively low level of risk. Between 1987 and 1991, 72 percent of the source control remedies selected included treatment as their principal element. Of the 24 percent of the remedies that relied on containment as the primary component during that time, the vast majority were for large municipal landfills and mining sites.

Let me turn to ARARs. As previously noted, the Superfund law requires that remedial actions attain, upon completion, the requirements of other Federal or more stringent State laws that are applicable, relevant, and appropriate under the circumstances of the release. In many respects, ARARs have proven to be extremely useful. For example, in cleaning up contaminated ground water, EPA considers drinking water standards established under other Federal and State laws when developing remediation goals. However, in certain circumstances, EPA has encountered some significant administrative and technical complications in complying with other laws. To a great extent, these difficulties have been encountered when Superfund is complying with certain requirements that are technology-based rather than based on the risk posed to human health or the environment. For example, technology-based standards may require treatment to the levels developed for waste

streams that cannot be achieved cost effectively for contaminated media.

Next let me turn to risk assessment. Risk assessment is part of EPA's implementation of the Superfund Program and was developed to fulfill the requirement to select protective remedies where standards are not available.

I will now turn to a discussion of some of the improvements that we've recently made in the Superfund Program to streamline the remedy selection and implementation.

As part of recent initiatives for administrative improvements to Superfund, EPA is in the process of developing soil screening levels. These are levels of chemical concentrations in soil which represent a degree of contamination above which there is sufficient concern to warrant further study. Generally, where contaminant concentrations in soil fall below the screening levels, no further study or action will be warranted. These numbers are not necessarily clean-up levels, but will foster quicker identification of contaminants and exposure areas of concern and will increase consistency. For those people that are able to get levels below that, that will give them an easy way to determine a level at which they won't have to be concerned anymore and hopefully expedite their ability to get clean-up. They'll know where the answer is, they'll know where the solution is very early.

Dealing with land use, the administrative improvements also propose changes to the way land use is considered during remedy selection. EPA is responding to some of the criticisms that it has not factored land use in well by trying to consider new policies to ensure appropriate and timely discussion of those most affected by land use at sites and to reduce overly conservative land use assumptions in remedy selection.

Next let me talk about presumptive remedies. Presumptive remedies are another way for us to try to streamline the program. These are preferred clean-up technologies for common categories of sites based on historical patterns of remedy selection, EPA's scientific expertise, and implementation experience. We believe that the identification of presumptive remedies will streamline the Superfund Program significantly by standardizing the current remedy selection process for certain types of sites.

Cleaning up contaminated ground water is one of the most difficult problems facing the Superfund Program, especially where ground water is contaminated by dense nonaqueous phase liquids, often known as DNAPLs. These can be, and are, very difficult to remediate. The present of DNAPLs at sites has led EPA to refine its activities and expectations regarding the practicable extent of ground water remediation. EPA is currently developing guidance that will suggest that if DNAPLs are present, EPA generally will take early actions to prevent further spread of the contaminants through containment and reducing the amount of subsurface DNAPLs. A long-term action objective should be to restore as much of the aquifer as possible to appropriate clean-up standards.

This two-pronged strategy is currently being applied at some DNAPL sites and has been successful in restoring portions of the contaminated aquifer to required clean-up levels at one site in New Jersey and two sites in California. However, I think we recognize

that at sites where there are DNAPLs, in many cases it will be very, very difficult to get full restoration.

The agency has taken a broad programmatic reform to make the overall Superfund process more efficient and cost effective. This reform is called the Superfund Accelerated Clean-up Model, or, for short, SACM. SACM will accelerate the Superfund process by better coordination between the Superfund removal program, which has traditionally been our emergency activity or our effort to get out there very quickly, take care of the very significant health or environmental risks—so by the coordination of what has been the removal program and our remedial programs, bringing them together, making that site assessment a more unified process, we believe will enable us to very much streamline the way clean-ups are identified and get under way. The whole thing can be done more timely and efficiently under current law and regulation.

In summary, I believe EPA is making significant strides in improving our ability to reach good remedy selection decisions more quickly. Clearly, a number of these are significant issues for debate, significant issues that are being actively discussed within the agency and within various advisory groups that now the agency has asked to meet, give us their counsel in developing a proposal for Superfund reauthorization.

Mr. Chairman, that summarizes my remarks, and I'd be glad to respond to any questions you all may have.

Senator LAUTENBERG. Thank you very much, Mr. Guimond. Your report is very interesting, and you have succeeded in coining several acronyms which I assume will wind up in the New York Times crossword puzzle.

[Laughter.]

Mr. Guerrero, I'd invite you to give your summarized testimony. If you can do it in five minutes, we'd appreciate it.

STATEMENT OF PETER F. GUERRERO, ASSOCIATE DIRECTOR, ENVIRONMENTAL PROTECTION ISSUES, RESOURCES, COMMUNITY, AND ECONOMIC DEVELOPMENT DIVISION, GENERAL ACCOUNTING OFFICE ACCOMPANIED BY KATE SIGGERUD, PRINCIPAL INVESTIGATOR; AND BONNIE BECKETT-HOFFMAN, PRINCIPAL INVESTIGATOR

Mr. GUERRERO. Thank you, Mr. Chairman. I'd like to take an opportunity to introduce, to my left, Kate Siggerud and Bonnie Beckett-Hoffmann, principal investigators on the report that you mentioned earlier.

Mr. Chairman, Members of the subcommittee, after 12 years of the Superfund Program and $15.2 billion in Government authorizations, questions remain as to whether EPA has made significant progress in cleaning up hazardous waste sites. To date, EPA has placed over 1,200 of those sites on the National Priorities List for clean-up, but as of September 1992—the most recent date for which data were available for our review—clean-ups had been completed or remedies constructed at only 149, or 12 percent of them. While EPA has been sensitive to concerns about the pace of the program and is taking steps to expedite the clean-ups, the trend has been toward longer and more expensive clean-ups. This trend is especial-

ly disturbing in light of the fact that EPA expects to add an additional 100 sites per year to the National Priorities List and that list will likely grow to 2,000 sites by the year 2000.

Our report being released today summarizes the type and extent of clean-up work at Superfund sites that were either deleted from the National Priorities List or at which construction of clean-up remedies had been completed. Progress at these sites, plus the removal of emergency conditions at thousands of other sites, demonstrates that the Superfund Program is taking steps that should reduce health and environmental risks.

However, the data on completed sites is subject to an important qualification: over 40 percent of these sites involve ground water treatment or the use of containment technologies that will require continued vigilance. EPA, States, and responsible parties will incur oversight and operation and maintenance costs, sometimes for an indefinite period of time, to ensure that the clean-up remedies employed at these sites remain effective. These costs can be substantial and represent an unknown resource demand on both government and private parties that may already be limited in their ability to carry out Superfund obligations.

For example, EPA estimates that States alone will incur $1 billion in operating and maintenance costs over the next seven years; however, States and responsible parties are already experiencing problems meeting these obligations. For example, at the Wade site in Chester, Pennsylvania, the State did not have the resources and staff to take required yearly ground water samples. At another site, Mowbray Engineering in Alabama, a periodic five-year review showed that responsible parties had not collected required ground water samples, maintained the site fence, or inspected and maintained the cap. In both cases, these failures demonstrate the need for public and private resources and continued oversight by Federal and State environmental agencies long after a remedy has been constructed.

We also found that at sites now classified as "construction complete" or "deleted," EPA had incurred a median cost of $3.5 million for site work it did. Future EPA clean-up costs for sites still in the pipeline may be significantly higher—some $26 million per site, by EPA's calculation. Costs will increase because future clean-ups will be more complex, more likely to employ treatment in response to the law's preference for permanent remedies, and also maintenance costs for these larger, more complex sites are also expected to be higher.

Mr. Chairman, this hearing today is well timed to discuss some of the issues pertaining to Superfund clean-ups, given the complexity of the program, costs already incurred, and the substantial costs that will be incurred in the future to both maintain existing remedies and undertake new ones. This debate is framed, on the one hand, by public opinion polls indicating that Americans perceive hazardous waste sites to be a serious public health threat and, on the other, by scientists who think that public concern is unconfirmed. Resolution of this debate over clean-up levels and techniques is further hampered by our lack of knowledge about actual exposure to, and the health effects of, hazardous waste.

Within this context, no consensus exists as to how much site clean-up is appropriate. My written testimony discusses four possible approaches currently being considered for selecting Superfund remedies. Two of these possible approaches tend toward greater standardization, setting uniform national clean-up standards, and using what's commonly referred to as the "best available technology" for cleaning up Superfund sites. Such standardized approaches have the potential to promote greater consistency in clean-ups, reduce the delays and uncertainties associated with the current approach, encourage voluntary clean-ups, and realize attendant cost savings. However, the lack of scientific data and criteria for setting standards and the lack of information on the efficacy of clean-up technologies makes reliance on standardized approaches difficult.

The other two approaches we discuss—risk assessment and the early clean-up of immediate threats, while deferring long-term remediation—also have strengths and weaknesses. Risk assessment, for example, is an important tool for ensuring that the resources spent on clean-ups result in real health and environmental benefits. It has also been criticized for widely dissimilar clean-up goals, making it hard to explain apparent inconsistencies between sites. A report we did for you last year cited an example of this problem. We found that soil clean-up goals for a carcinogen frequently found at hazardous waste sites varied widely at the 14 sites we investigated, from .19 to 700 parts per million.

In summary, Mr. Chairman, each of the four approaches we discuss has shortcomings. Given questions about the relative merits of various approaches to Superfund site clean-up and the complexity of the clean-up problems posed by most sites, EPA has no obvious and clear-cut solutions for expediting Superfund clean-ups. However, one thing is certain: better information is needed about the risks posed by Superfund sites, the effectiveness of remedies currently used, and the potential for innovative technologies to accomplish this difficult task more effectively and efficiently.

That concludes my statement. Thank you, Mr. Chairman.

Senator LAUTENBERG. Thank you very much.

Mr. Williams, Assistant Attorney General, from the wonderful State of Minnesota.

STATEMENT OF ALAN C. WILLIAMS, ASSISTANT ATTORNEY GENERAL, STATE OF MINNESOTA

Mr. WILLIAMS. Thank you, Mr. Chairman, and thank you for the opportunity to testify on Superfund remedy selection and clean-up requirements from the State perspective. The approach to remedy selection I will testify about was developed by management of the Minnesota Superfund Program, with advice and counsel from the Minnesota Attorney General's Office. We call it the "Minnesota approach," but it reflects the thinking of other States Minnesota has worked with in the Association of State and Territorial Solid Waste Officials and in other forums.

Before I describe the core of the Minnesota approach, let me give a quick outline of what we see as the problems with the current system. First, the overall goals of Superfund clean-up are still not clearly defined in terms of what we want those clean-ups to

achieve. In particular, the current system has no definition of a permanent clean-up solution, and clean-up protectiveness is measured within a wide range of health risks rather than by a single risk standard. Second, there are almost no applicable clean-up standards for soil and ground water contamination, soil contamination in particular. This forces EPA to rely on relevant and appropriate standards and site-specific risk assessment, with all of the extra cost, uncertainty, and argument that those methods can produce. Third, we think that the current decisionmaking method for selecting remedies by balancing multiple criteria is like a black box. It seems to be capable of producing almost any remedy decision for a given site, and it does not adequately focus remedy selection on the important goal of remedy permanence.

In a nutshell, those are the problems. Our approach to solutions begins with the proposition that the overall goal of all Superfund clean-ups should be to achieve a fully protective and final clean-up. The two key requirements needed to meet this goal are, first, a definition of a permanent or final clean-up; and, second, a single, uniform health risk level that is the measure of a fully protective clean-up.

With these overall standards for clean-up in place, we think that EPA should be directed to develop numerical clean-up standards or scientific standard-setting models for hazardous substances that are calculated to achieve the uniform risk level. These standards would become national minimum clean-up standards, and they could supersede relevant and appropriate standards that are now used under CERCLA, which is the most problematic part of the current ARARs system for setting clean-up requirements. These numerical clean-up standards could also reduce reliance on expensive and time-consuming site-specific risk assessment. Finally, they could contribute to greater remedy consistency from site to site.

The Minnesota approach also includes three changes to the current remedy selection decisionmaking process. First, we would recommend placing a clear priority on selecting a fully protective and permanent remedy by requiring that if there is an available technology that can achieve this overall goal, then it must be selected unless the cost of implementing that technology is grossly disproportionate to the benefits realized by a fully protective and final clean-up.

Second, we would recommend simplifying the criteria-balancing approach that's currently used and to use that simplified approach only when selecting what we call a "next best" remedy—that is, the remedy that would be selected if no fully protective and permanent remedy can be selected. The next best remedy would use feasible technology to provide the degree of permanence and protectiveness that most closely approximates those overall goals.

Our third change that we would recommend in remedy selection decisionmaking is to identify remedies and technologies known to work successfully for certain categories of sites and contamination. This would help limit the evaluation of alternatives to the ones most likely to succeed.

That's the core of the Minnesota approach. I'd like to return for a moment to the permanence issue to emphasize why we think it's so important. It appears to us that virtually everyone that's work-

ing on these clean-up issues recognizes that future land use at a Superfund site must be considered when selecting a remedy and deciding how clean is clean. There's also general recognition that non-permanent remedies raise many serious questions, such as: Will long-term monitoring be done properly? Will it detect remedy failure? Will the remedy get a regular reevaluation of its adequacy? Who will make sure that land use restrictions and access controls are enforced to prevent future exposure to hazardous substances? And how will Superfund responsible parties, government agencies, and, most importantly, affected communities know when it is safe to forget about the site because it no longer poses any hazards?

The best way to assure that future land use is taken into account and to maximize clean-ups that do not rely on long-term care, supervision, and use restrictions to keep them protective is to impose a clear preference at the start of the remedy selection process for remedies that are permanent—that is, remedies that are final and allow for unrestricted land use. We strongly recommend including such a clear preference in the reauthorized CERCLA.

That completes my testimony, Mr. Chairman.

Senator LAUTENBERG. We thank you all very much.

Mr. Guimond, we've heard from Minnesota. You've also heard, I understand, through written submission, from Monsanto and the NRDC, and they've offered proposals for changing the clean-up process at EPA's NACEPT meetings. What about EPA's ability to implement proposals without changing statutes?

Mr. GUIMOND. Well, through the NACEPT process that's ongoing right now, you're absolutely correct, we have heard a number of proposals from industry groups and environmental groups. We're also hearing some other proposals coming in independent of those, separately, and I think the agency is now in the process of getting that debate well understood among the advisory groups, taking a look internally at how we would have to change any implementation within the current law or what changes to a new law would have to be done to deal with those.

Frankly, Senator, we have not made any final conclusions on any of this at this stage. We think that debate is good. We think that it's very wise for us to take a look at how it would be done, how each group believes it would improve the system, and how the agency could in fact carry it out, and it's with that discussion that we hope to come up with a proposal.

Senator LAUTENBERG. Is it possible that these changes can be made without legislative change?

Mr. GUIMOND. Some may. Some might be able to be made without legislative change. I think some of them would have to have legislative change. In some cases, what we have heard from some of the groups out there is even those that they felt might be able to be made through administrative change within the agency, they may still like to see done through legislative change, too, because it puts, I think, the Congress' stamp of the direction they'd like to go as opposed to just an administrative change.

Senator LAUTENBERG. If we eliminate the law's preference for "permanent" remedies, won't the PRPs have less incentive to

invest in research examining new and more efficient technologies? Doesn't that take away the pebble in the shoe a little bit?

Mr. GUIMOND. Probably. I think you'll see a—folks will debate that. You will have some folks tell you, "No, they'll still work on trying to come up with better innovative techniques," but I think if you look historically a little bit, obviously prior to the preference for permanence in the current law after SARA, prior to that we were selecting, in many cases, less permanent remedies, more containment-type remedies. So I think the issue that is being surfaced here, though, is one of how can the Congress and the agency work on solutions that are going to provide adequate health protection and environmental protection, and is permanence an integral part of that, or is permanence some extra piece of insurance?

So I think that's part of the debate that's got to be going on right now both within the committees that are advising the agency and, I think, ultimately up here on the Hill. That is, you may be able to provide the same degree of health and environmental protection through some less permanent remedies, but the tradeoff for that may be that you've got to have vigilance for an extended period of time and you may have to go back sometime in the future to go do something again, and that tradeoff, I think, has got to be part of the debate.

Senator LAUTENBERG. Does permanence become a subheading as we consider the other things that you and your colleagues talked about? Is a permanent solution something that carries along for a number of years with a note to observe, maintain, et cetera—the vigilance, as you describe it? What is a permanent solution? Is it the same in all cases?

Mr. Williams, I think you kind of raised that.

Mr. GUIMOND. Well, I think permanent remedy is going to vary a little bit from site to site in many cases. Mr. Williams talked about if there was a solution to go ahead for permanence, you would go ahead in that direction. Now, I'll give you some example of that. Often incineration is considered to be a permanent remedy. It can be a very expensive remedy. In many areas, the community is not thrilled to death to see incinerators installed either on a Superfund site or adjacent to one.

Senator LAUTENBERG. That also raises the question about whether or not the material to be incinerated has been fully removed, contained. I don't want to get into a semantic discussion here, but when we talk about a permanent solution, it's interesting to see how evasive a conclusion or a definition is.

Mr. GUIMOND. It's very difficult. I think permanence is believed, from our standpoint, to be one in which you're destroying—you're doing some treatment, so you're, in other words, destroying the hazardous constituent; you're making it more innocuous; you are reducing somehow it's ability to interact with the biosphere, interact with humans; you are changing its form in some ways——

Senator LAUTENBERG. Can you say that it will never again be a problem? Does that cover it?

Mr. GUIMOND. Well, yes, I think you're certainly trying to reduce its likelihood of being able—you know, in some cases, permanence may be locking it up into some different form through the use of a concrete matrix, through the use of classification, or things like

that. Now, you can't say it's never, ever, ever going—because it might get broken, but the likelihood of it becoming a problem is substantially reduced.

Senator LAUTENBERG. It raises an interesting question. We'll have a chance to discuss it some more.

Senator Durenberger?

Senator DURENBERGER. Thanks, Mr. Chairman.

Mr. Williams, thanks very much for being here today and not only representing our point of view, but I think the point of view of a lot of the States. Let me just talk to you a little bit about that.

In our second panel, the industry representative is going to recommend that Congress repeal the preference for permanent remedies that includes treatment and that's now in the statute, and he's going to argue that it leads to remedies that are too expensive in comparison to containment remedies. First, do the States share that view? Second, do you recommend that we repeal the preference for treatment that's now in the statute?

Mr. WILLIAMS. Mr. Chairman, Senator Durenberger, thank you for asking the question. We definitely don't share the view of Monsanto on repealing the preference for permanence, and with regard to the alleged expense of permanent remedies, we don't think that there is a very good standard or any real standard for measuring whether permanence is too expensive. We don't think that enough attention has been paid to the value of a permanent remedy, to the value of avoiding what Mr. Guimond has just talked about and what the GAO talked about, this long-term vigilance that's required when you don't have a permanent remedy, the extent to which you rely on someone—government or private responsible parties—coming back and making sure that remedy doesn't fail, making sure that the various types of use restrictions are maintained. So we don't think that the cost of doing that and the risks of having to do that have been fully evaluated in the cost-benefit analysis.

Senator DURENBERGER. Let me follow up on that, then. My recollection is that the reason that we put preference in there is the concern about containment remedies and the assumption, or there was a reality, I guess, and our perception at the time was that containment remedies often failed—the caps cracked, the sites flooded, the site isn't properly maintained—and that's why we require treatment before land disposal under RCRA. What is the evidence now about the performance of containment remedies? Is there still cause to be concerned about the long-term viability of the kind of containment strategies that are being used now to manage hazardous waste?

Mr. WILLIAMS. Mr. Chairman, Senator Durenberger, I think that the GAO testimony raised some questions about that and that the NRDC testimony also does.

Senator DURENBERGER. What do you have by way of evidence?

Mr. WILLIAMS. I think I agree with GAO that we don't have a long enough period of experience with these containment remedies in place to know how long they are going to be—how long they will be safe, how long they will remain as they are supposed to be.

Senator DURENBERGER. Well, Mr. Guimond, let me ask you to follow up on that same question. The reference was made to

NRDC, and when Linda Greer comes up to testify, she's going to give us an example of Stringfellow and then, I think, some examples with regard to the recent flooding in the Midwest and the rising ground water levels. But is that the case? I mean, is that a problem? Are some unexpected risks occurring at some of these sites?

Mr. GUIMOND. I think, as points have been made, we're still in early stages of seeing how long the various containment remedies will survive without any need for continued—you know, any remedial action to fix them or make any changes. Obviously, in those parts of the country where a remedy might have some likelihood of frequent flooding, of frequent various types of natural interactions that might somehow erode it, that will be a problem, but we would hope in most cases where containment-type remedies are being put in, folks are trying to engineer against those kinds of intrusions to the extent that they possibly can, and much of that engineering is able to be done.

So, frankly, we still have a considerable amount of confidence in the containment remedies when we put them together. We don't put them together or oversee PRPs put them together where we think it's a willy nilly likelihood of them failing in the near future.

All that said, obviously if you're going to have something that's going to have a greater degree of likely destruction of the material in the first place, if you are somehow destroying the hazardous constituents, that concern is not going to be with you anymore because you have destroyed it through whatever technology you have used. So that tradeoff clearly is the tradeoff between permanence and containment.

Senator DURENBERGER. Let me just concentrate on the floods. I think she has a list in her testimony. I assume you've read her testimony. Is she blowing smoke or water?

Mr. GUIMOND. Personally, we right now, as the floods recede, are going in there to take a look at to what extent there has been any interactions or problems with Superfund sites either in early stages or final stages down the road. So I'd be glad to give you more follow-up on that for the record once we've been able to examine the situation in more detail, but right now I really can't give you heavy detail as to what extent there have been problems.

Senator DURENBERGER. Let me ask another question about another aspect of the choice between treatment and containment. Containment often includes what I'll call institutional controls—deed restriction, zoning ordinances—that have to be in place and in force in order to assure that potential risks are avoided. Tell us a little bit about what you know about these institutional controls. Do they work? Who enforces them? How much does it cost to maintain them?

Mr. GUIMOND. Institutional controls such as deed restrictions and that other stuff have been part of some of the remedies we've put together over the years. They are used often as trying to have some additional insurance policy out there to try to make sure that you're not going to have inappropriate uses. To date, I think we've seen pretty reasonable success in those, but obviously we're still in early stages. The program has only been around since 1980.

I think the worry people have with the use of things like deed restrictions or zoning controls or stuff like that is it's not for 10 years after you've done it, it's 30, 40, 50, 70 years after you've done it, whether those things can continue to stay in place for extended periods of time if you have a very hazardous material. So that, I think, is—you know, it's still early for us to have extensive experience on their effectiveness.

Senator DURENBERGER. Now I want to ask some questions about ARARs. Does anybody here on this panel want to defend ARARs as they're included in the current law?

Mr. WILLIAMS. Well, Mr. Chairman, Senator Durenberger, we would in Minnesota defend the "applicable" prong of ARARs. I don't think we would defend too strongly the "relevant and appropriate" part. We think that leaves too many questions for judgment, too many possibilities for dispute, too many difficulties in deciding really what is relevant and appropriate. So our approach strongly prefers the development of more standards that would be applicable to clean-up, and directly applicable to clean-up.

Senator DURENBERGER. Mr. Guerrero?

Mr. GUERRERO. I don't want to elaborate on some of the concerns that have been raised on ARARs, because certainly they have limitations. But I would want to add a note of caution in any movement toward the establishment of minimum national standards. While minimum national standards may have some appeal, it's important to keep in mind, first, that very often the data or information necessary to set those standards may be lacking; and, second, the history of EPA as a regulatory agency in promulgating standards is replete with delay and frustration. Therefore, it is not clear that uniform national standards for Superfund would be a quick fix.

Senator DURENBERGER. Mr. Guimond?

Mr. GUIMOND. ARARs, obviously, is a point of a lot of discussion among the States, with responsible parties, among our staff, frankly. The use of Federal, say, drinking water standards to help give us some guidance in clean-up I think has had a very, very useful role, pointing to people so they can move ahead and get some certainty. The problem has occurred in many cases where there is a very fuzzy—what is going to be appropriate and relevant? This is very fuzzy. It's in some cases non-quantifiable. Various people are trying to push it forth, and, frankly, our regional offices often get into extensive debates with State and local governments over what are appropriate in those cases and to try to come up with a solution.

So that is not without some rough edges, by any stretch of the imagination, and it's part of our extensive discussions going on with our advisory committees, with the States, and with responsible parties now to see if we can come up with a better way to handle it.

I would note—I think I'll put a little more positive note on some actual standards, though. I am personally a believer, and I think the agency is, in trying to get more national standards to the extent that we have. We've tried a little bit—I think right now we're probably trying a little bit to have our cake and eat it, too, in that a lot of folks see some usefulness of national standards as

being some bench marks to point to, that a responsible party can see where the end is and kind of work in that direction very carefully, and those will probably be very valuable for the lesser expensive sites, because they're generally likely to be done on a little more conservative side. Now, for large sites, complex sites, I think you will probably find a lot of people who say, "Gee, you probably ought to do more risk assessment work there so that you don't do more overkill or pick the exact right solution."

So by sort of trying to go both roads, we haven't made life easier on ourselves, to some degree, but we're trying to get the maximum advantage of both a national standard, yet give some flexibility where in fact it's appropriate to do. That, I think, is the path that we're on right now. Without a doubt, we can't get the standards done as fast as we'd like, but we're on a track now to get about the 100 most common chemicals that we see for soil standards as quickly as we possibly can.

Senator DURENBERGER. Great. Thanks.

Senator LAUTENBERG. Senator Smith?

Senator SMITH. Thank you, Mr. Chairman.

Mr. Guimond, I take a little different approach than some of my colleagues here. I'm very pleased to hear that you're considering a policy change in this area and the fact that you recognize that it may not be appropriate to require all sites to be cleaned up to residential standards or permanent standards. I think that's a refreshing approach to your agency, and I commend you for it. I've been waiting a number of years to hear it, and I want you to know that I, from my perspective, think it's fantastic.

Do you feel that you need legislative remedy to pursue that, or can you do that within the agency? And the legislative remedy—the law seems to tilt toward permanent clean-up, with no flexibility. Do you need or want changes in the law to do what you need to do?

Mr. GUIMOND. The agency right now is, I think, trying to exercise, through the current law, the degree of flexibility they feel appropriate to both exercise moving toward permanence and treatment, yet provide flexibility where that's inappropriate, where we can't achieve that. I would note that obviously there are two key camps that I see. Some folks will say permanence should be our number one priority and move in that direction; others believe that it is causing a misuse of resources and is not necessary to provide adequate public health and environmental safety.

Right now the agency has not come up with its exact position as far as the new Administration on reauthorization as to how much degree—the direction it wants to move in the reauthorization. We're looking hard, meeting with the advisory groups. Our administrator and deputy administrator have been meeting with individual groups—environmental groups, industry groups—to hear their position, the pros and cons, the costs they see involved with that, and the implications, and out of that we hope to come up with the administration proposal by the end of the year.

Senator SMITH. I asked the same question of Ms. Browner when she was here for her confirmation hearings, and she indicated at that time to me that she wasn't certain at that point. She wanted

to see how far we got into the matter and then make some suggestions. So I'd be anxious to hear any——

Mr. GUIMOND. If I might add on that, we are—in the spirit of what she indicated, we have put a number of these administrative improvements, and we're trying to gather some experience through those and use that to form the administration's proposal on reauthorization.

Senator SMITH. Thank you.

Mr. Williams, I'm a little bit surprised at the Minnesota approach. I don't think all States would agree with you that—certainly, I don't think my State does, New Hampshire—that a permanent solution is necessarily correct in all cases. You indicated, in response to the question that Senator Durenberger asked you regarding Monsanto, that you did not agree with that approach. Given a limited amount of resources, in some cases not adequate risk assessment, and the difficulty of prioritization, how can you put one uniform standard on all of the Superfund sites in America? How can you do that and with the fiscal restraint that's forced upon us, how can one solution do justice to all of those sites with no flexibility?

Mr. WILLIAMS. Mr. Chairman, Senator Smith, the approach that I've talked about would make permanence a uniform national goal for all sites. There would be some flexibility. We recognize that as a society we're not willing to pay unlimited amounts of money for a permanent solution to all of these hazardous waste sites. But we think that the current process doesn't put sufficient emphasis, nor sufficient upfront emphasis, on the land use aspect of clean-ups. We think we ought to recognize that it's much better to have a clean-up that can be determined to be protective of public health and does not need all these 30, 40, 50 years of monitoring, operation, and maintenance, and then still leaves us with uncertainty about what happens if someone digs into this site and decides 50 years after the fact that this site should now be used for residential use, and somehow we've forgotten what we have done with that site.

We think it's much better to start with a permanent solution when you can, and we think that there should be a very definite—we think there should be a cost consideration in deciding when permanent remedies are used, but we think it ought to be a very high cost screen, because we think permanence has a very high value.

Senator SMITH. I understand what you're saying, but my response to you would be I'd rather see the folks in Minnesota make that determination rather than the folks in Washington. With the proper flexibility within the confines of your State, you can prioritize the sites that are going to be residential in the immediate future, or should be or are now, or a playground or whatever. You can prioritize that and do that permanent clean-up, whereas if you have one that may be somewhere else in Minnesota that's not going to be a residential site for the next 100 years or so, why should we spend money to permanently clean that up today?

Mr. WILLIAMS. Mr. Chairman, Senator Smith, we're also suggesting that it would be appropriate to have some State and local involvement in that decision. Obviously, local governments are the governments that traditionally have the responsibility for land use

decisions throughout this country, so we think that some element of decisionmaking should be there for the local governments. So we're not saying that—I think what we're trying to tell you in looking at reauthorization is that permanence is very important and it ought to have some presumption that that's what we want to achieve if we can, and we ought to try very hard, so we ought to be willing to pay a fairly high level of cost to do that.

Senator SMITH. I would agree with you, providing it doesn't detract or take away or deter clean-up of another site that may be more of a danger somewhere else in America, and my point is that with the uniform standard of permanence in the law, you can't do that. I think that's what Mr. Guimond and other of his predecessors have struggled with.

Let me just ask you a question, Mr. Guimond, a follow-up on that, and then I have, if I don't run out of time, one question for you, sir. Is it a fair statement to say that in certain circumstances the containment of a site or some treatment strategy that contains the problem—is it fair to say that in some cases that's just as safe as permanently cleaning it up?

Mr. GUIMOND. If by "safe" you mean is it providing adequate protection to public health and the environment in that area—is that what you mean by that? Yes, we believe so, and as we go out, you know, we follow the law very closely in whatever remedy you put in place, and sometimes a containment one would have to go for practical or whatever reasons. But we do those in a way that we believe the nearby public and whatever area near there is protected, the public health.

Senator SMITH. Mr. Guerrero, I don't know if you said it or if it was in your written statement, that the majority of sites that we've cleaned up to date were in the so-called "least expensive" category, that the expenses are going to increase, and that future clean-ups could run around $25 million per site on an average. That's a lot of money. As we struggle now with the reauthorization of Superfund hopefully, the Congress will have the courage to make changes in the statute—but as we struggle with that, can you give us some advice on a strategy we might use to reduce these costs and the financial burden on all levels of government and society and still, at the same time, maintain a decent schedule of clean-up?

Obviously, this is difficult during the tough financial times that we have, but we all know what the problems are, I think, but we're a little short on solutions. I would be interested in any advice you could give us in that regard.

Mr. GUERRERO. We could probably talk for a long time about how we can make the program more cost effective. In past work we've done, we certainly have targeted the heavy reliance of the Superfund program on the use of contractors to accomplish its mission. We've identified opportunities where it could use contractors more cost effectively, and where the controls were inadequate to ensure that contract funds weren't wasted or misused. In terms of EPA's cost recovery from responsible parties for work that EPA has done, we felt that certainly there's room for improvement there.

In this area of remedies and remedy selection, there is certainly the potential for using some of the approaches that you'll hear today from other panelists in terms of standards, in terms of pre-

sumptive remedies, and in terms of best available technologies. All of those have, in turn, opportunities to make remedy selection more cost effective and the clean-up process more cost effective. But they're all fraught with questions that come to the heart of the program—the preference for permanence.

So they're not easy issues to tackle. They're not easy issues to resolve. But we can certainly provide you with a long list of cost savings, if you would like that.

Senator SMITH. I'd like that. Whatever suggestions you have, I'm open to them.

Senator LAUTENBERG. Thank you, Senator Smith.

Mr. Guimond, the PRPs claim that EPA's risk assessments greatly exaggerate the risks and make them waste a lot of money because of unrealistic assumptions. What's your response to that?

Mr. GUIMOND. Obviously, we've heard that for some time ourselves and took a hard look at our risk assessment process to try to see if there was a lot of merit to that. I think, as far as the risk assessment itself is concerned, we believe that the risk assessments done for Superfund are probably no more, and possibly even less, conservative than those done for the bulk of other programs within EPA and other comparable Federal agencies.

I'll give you a couple of examples. Oftentimes, agencies will use assumptions that people are going to live in an area for 70 years as a default way of estimating how much exposure they're going to have, and many people will say, "People just don't live there 70 years. They live there a lot less period of time." In Superfund, we typically use 30 years as the period of time. So there's a factor of over two in the difference there. There are a number of other cases.

Now, I suspect what we've done, then, over the past several years is we've revised our guidance on risk assessment to ensure that we're in the mainstream of the scientific community. We try to not use what I'll call worst-case assumptions, but assumptions that are going to say—are perhaps on the conservative side. We're trying to protect—we're trying to ensure that we're not just protecting the average person or the average exposure situation, but something a little more on the conservative side, but not, by any stretch of the imagination, a worst case. So in that respect, I think that we've done a lot over the years to ensure that risk assessments are not overly conservative. We can debate individual assumptions used in individual cases a little bit, but I think that we're trying to get very mainstream.

Where I think the responsible parties probably—where I think their bigger issues with us are is not so much on the risk assessment itself, but possibly on the risk management decision—that is, the land use assumptions, the assumptions of whether there's going to be residential application or whether it's an industrial application. I think that may go to the heart of much of the difficulty as opposed to just the bulk of the risk assessment effort itself.

Senator LAUTENBERG. The risk assessment process is under—I'm extending what you've said a little bit—is under fairly continual review. Is that——

Mr. GUIMOND. Yes, and we, a little over a year ago—about a year and a half ago—submitted it to the agency's Science Advisory

Board, which, as you know, is an independent group of scientists unaffiliated with the agency, to come in and take a look at it, and they've looked it and they've given us some minor suggestions to make some changes, but they did not find it flawed and felt that it was an appropriate technique to use.

Senator LAUTENBERG. Mr. Williams, could institutional controls really be enforced, looking out at a period of 10 or 20 years hence, to make sure the clean-up stays intact?

Mr. WILLIAMS. Mr. Chairman, we have serious doubts about that. We have some experience with looking at what institutional controls are appropriate at various Superfund sites in Minnesota. We found, for example, that a lot of people think an institutional control is a deed notice, a notice that's placed on the deed to property that says "This site is contaminated." That's merely a warning. That doesn't do anything to make sure that the land isn't misused or that material that is still present there in a containment situation is not disturbed.

We look at deed restrictions under Minnesota law, and we find that unless the State government is in some way given enforcement powers within the deed restriction and the way it's written, that deed restriction is going to expire by operation of law in 20 years. Now, I don't know what other State laws are, but that's one of the things we've identified. We also find that there's——

Senator LAUTENBERG. Are you suggesting that all deed restrictions have——

Mr. WILLIAMS. Under Minnesota law, restrictive covenants——

Senator LAUTENBERG. Last only 20 years?

Mr. WILLIAMS. Last 20 years. We think we can get around that by making the owner of the land responsible to report back to the State before they disturb a containment remedy, but what I'm trying to tell you is you have to be very careful about these things.

Senator LAUTENBERG. Mr. Guerrero, you talked about ways for improving the clean-up process. You had several. How do you reconcile these different proposals into something that's more specific and attainable?

Mr. GUERRERO. Well, I think, first, Mr. Chairman, it involves some recognition that some of the approaches, such as those that EPA discussed today—setting soil clean-up levels, identifying presumptive remedies based on past experience—are efforts that have potential payoff and should continue to be pursued.

A second thing we heard about is the development of standards, and I think I had appropriately caveated that earlier, that while standards have certainly great appeal in terms of removing some of the uncertainty and perhaps reducing some of the cost to the program, standards are not a quick fix.

A third point I would make there is the use of risk assessment is a central part of the program today and will likely continue to be a central aspect of the program. What we need to do in regard to risk assessment is resolve certain key issues such as future use of land, which sometimes drives risk assessment to conclusions that people find unacceptable. I think EPA there, too, is working on guidance and trying to resolve that, involving the key stakeholders—the PRPs, the communities and States.

In short, I would say, Mr. Chairman, that the continued efforts to ensure there are effective and cost efficient remedies under Superfund involves a balancing probably of a number of these approaches and resolution of a number of these issues. But central to all of that is better information on health risks posed by Superfund sites, better information on the efficacy of clean-ups that have been put in place today—how are they working, are they likely to continue to work for the long term—and better information on the availability of alternative and innovative technologies to get the job done quicker and better.

Senator LAUTENBERG. Do you see, any of you up there, the possibility of kind of packaging this neatly and saying, "OK, this in this 20-page manual or 50-page manual is the way that these programs ought to be undertaken," including risk assessment and all of the other questions that are so evasive when it comes to answers? Can we tie down the clean-up process? There is experience now, a dozen years, that has helped, I would imagine, significantly in terms of hands-on experience, learning about how you deal with problems. These things seem to have a dynamic to them that I find disconcerting. You think you've got it locked up, and suddenly you find out that there's a new condition.

Now, we can't do a lot about floods, natural disasters, but can you see ever establishing, Rich Guimond or Mr. Guerrero, a set of criteria that gives us the comfort level that we'd like to have?

Mr. GUIMOND. Well, let me just comment from our standpoint, Senator. Originally, I think, in the early years of the Superfund Program, we shied away from trying to do that kind of stuff in the effort to maximize flexibility and ensure that each community was getting the most appropriate remedy selected for it based on its unique characteristics. I think over time we've seen that in the efforts of moving more expeditiously, the more commonality we've seen among various kinds of sites around the country, trying to get people solutions faster, that we've got to in fact get your 20-page—it might be characterized as a cookbook, if you will, trying to get a little more uniform, trying to improve consistency, trying to reduce the amount of guidance that—the piles and piles of guidance that goes out to them.

So we're clearly working in that direction at the agency. Whether we'll ever get it down to 20 pages, I don't think that's going to happen real soon. But I think we're moving in the direction of trying to become more consistent, trying to make sure that it's simpler, it's more user-friendly both to the public, to our staffs across the agencies, and that's a very important goal, and it's a goal that our staff is bringing into the debate going on in the agency as to what we'd like to have through the reauthorization process. Those are certainly very active considerations.

Senator LAUTENBERG. Mr. Guerrero, do you have any comment?

Mr. GUERRERO. Yes. We heard today testimony advocating a single risk standard or other kinds of criteria that have great appeal, simply because this is a program that is very complex, and it's a program where sites differ significantly in terms of the risk they pose to human health and the environment, they differ in terms of the type of contaminants, the pathways of those contaminants, and the exposure of individuals to those contaminants.

Given the complexity of this program, the conclusion isn't that we throw up our hands. I think EPA has a wealth of information that it can draw on now, and it can learn from experiences with certain types of clean-ups that are already in place and clean-ups that are already in the process of being designed. For example, its use of presumptive remedies for certain kinds of sites—municipal landfills, PCB contamination, and the like—there is a potential there to draw on that experience and simplify the approach and get on with those clean-ups.

On the other hand, there is a good amount of debate over what you do with those other sites that don't fit into these neat kinds of categories. It struck me that based on today's discussion, central to this issue of permanence is to reconcile the view you hear from a State like Minnesota versus what you'll hear later on from Monsanto. Central to that is the need for better assurance that the kinds of institutional controls that we are going to rely on in some cases and the kinds of remedies we're going to rely on in other cases and the combination of institutional controls and remedies will work. We have lots of doubts right now about that.

We have doubts about the ability of institutional controls to do the job well into the future. States are worried about that, environmentalists are worried about that, what happens 20 or 30 years from now, 40 years from now, when people simply forget about that restrictive covenant in the deed. We also simply don't have enough good information on the efficacy of remedies in place, and central to resolving this issue and this debate is just increasing our assurance with those two key areas.

Senator LAUTENBERG. You know, for those of us on this side and probably that side of the table as well, it would be really reassuring if we knew that we could have a series of bench marks that say, "When you get here, you turn right; when you get there, you turn left," and everybody does it in unison. The fact of the matter is that I had a chance over the last recess to visit a few sites, and I was struck by what a difference soil composure makes in terms of how you remove stuff. I found that in some sandy soil it was a relatively easy response. Again, definition of land use is a critical one.

But I'd have to say this, and I am a Superfund supporter. I think that though we've gone through a fairly extensive and costly learning experience, the fact is that we went through a long period of time for abuse of the environment in which we operated, and it seems to me.that we're gaining on it, that I see the remedies put in place in shorter time periods, that they do seem to be more effective.

What we also are not considering is the competition among communities. Some communities want to get on the list, some don't want to get on the list. Those who don't want to get on suggesting at times, "Well, we'll destroy the reputation of this facility, this community, this area," et cetera, where others say, "Hey, let's get the funds coming in here, and we'll get it cleaned up," and as a consequence of that, you start developing different political perspectives.

It's quite complicated. But I would conclude by saying that I think that we are gaining on it, that there is no question that the program needs significant review and reform.

Mr. GUIMOND. Senator, if I might comment on that, as you noted, these problems did not get there overnight. Some of them took 20, 30, 40 years to fully materialize and contaminate extensive sections of ground water or land or whatever it may be, and although I think everyone is frustrated that we can't take care of it in two years or three years or five years, we ought to recognize that working a lot with Mother Nature and trying to make change in those processes is very difficult. So I think we have to reconcile our expectations of how quickly we can bring these things about with what technologies we have to do.

I guess I'd like to make one point relative—this is a little plug for the program. Mr. Guerrero related that we've completed 149 sites. We actually have now completed construction at 182 sites, heading to have in excess of 200 by the end of this month. So we really are taking very seriously at the agency the effort to get construction completed at sites as rapidly as possible.

Senator LAUTENBERG. Thank you.

Anyone else with any—Senator Smith?

Senator SMITH. Mr. Guimond, there is a proposal now at EPA to place the Portsmouth Naval Shipyard on the Superfund NPL list. I don't expect you to comment specifically on the case, but I want to ask you a generic question regarding this.

The shipyard is currently involved in RCRA corrective action, and they believe that the Superfund listing is unwarranted. It's quite a controversy in the State at this time, largely due to the fact that Pease Air Force Base, which is closing, is on the list, and I think EPA and the Defense Department have done a tremendous job working together to not only clean up those sites, but also to redevelop the base. It's been going very well.

But, in a generic sense, what is gained by switching an ongoing RCRA operation to the NPL? I mean, what do we gain by it? Is there any reason to do such a thing?

Mr. GUIMOND. Senator, most defense bases across the country have some type of RCRA corrective action or RCRA activity going on them, and so I think if we use the criteria if there's some kind of RCRA going on there, should we not put them on the NPL, we would find that we probably wouldn't have any Federal facility, DOD facilities, on the National Priority List.

Now, one might argue, "That's fine. That's swell. We think we can still get them cleaned up without having a National Priority List," and that certainly may be a view, and it may in fact have some reality in certain cases. But as we take a look back at the law of 1986 and when the Federal facilities provisions were put in asking the agency to take a look at them and to list Federal facilities that had significant problems, I think that's what we're responding to right now, is the belief that it was the intent of Congress for us to take a hard look at the Federal facilities, and those that in fact were comparable types of problems to other non-Federal ones, to go ahead and list those.

So I appreciate your point. I think it's a thing that we're talking about, you know, that Portsmouth is not the only one that people would rather get on, and there are various others. So that's certainly part of the discussions, too.

Senator SMITH. Sure. Being on the list is one thing, but that's not necessarily the bad part about it. The bad part about it is that there is the potential, I think, for delays, duplication with two different agencies working on clean-up. There's certainly work to be done there in terms of clean-up, obviously, any military installation, I haven't taken a public position whether or not to put it on the list. Everybody's kind of split in Maine and New Hampshire on that. But it just seems to me that there is the potential for delay, duplication, additional cost, and I'm just trying to see what the advantage would be to place it on the list if in fact RCRA is progressing in terms of what they're supposed to do.

Mr. GUIMOND. Well, I think your points are worth discussing and looking into whether there's an advantage or not. Again, it was our perception that this was—and the advantage in some cases, frankly—we've heard from other bases that in fact did want to, for whatever reason, that this was going to be more likely from the resources through DOD to come in and take care of the clean-up and get the clean-up done more expeditiously.

Senator SMITH. I can't speak for the whole community, but the military base and some of the community, the majority seems to feel otherwise.

Mr. GUIMOND. Sure.

Senator SMITH. Let me ask another question in that same area. I have trouble understanding the numerical ranking or the hazardous ranking system score that you use to determine how a site goes on the list. I think 28.5 or something is the bottom or the minimum.

Mr. GUIMOND. Right.

Senator SMITH. What data or what information goes into this? I think I had seen 60 or something was the rating or the numbers, the standard rating of the Portsmouth Shipyard. But, I just am curious as to how these——

Mr. GUIMOND. How the score is done?

Senator SMITH. Yes, how this is done in terms of risk assessment, prioritization, the type of contaminants, where it's located, and all that. I assume there's a lot of criteria there. Is it subjective? There must be a lot of subjectivity to it.

Mr. GUIMOND. Well, obviously, there's some, but we try to get it as objective as possible. What the agency does is it takes what data it has associated with the type of contamination, whether we have extensive documentation of that contamination or whether it's fuzzier data, poor quality data. We take a look at the number of people likely to be exposed by it. Are there very few people in the area? Is it a very extensive population? Is there a ground water problem where people are actually drinking from the aquifers? Is there surface contamination where people are actually drinking or using the water from that?

Those various characteristics are put together in a formula, if you will, and after applying that information from there, the formula is run through an analysis, and that's how you end up with a number, whether it's under 28.5 or over 28.5

Senator SMITH. Do you include any nuclear materials in that as a contaminant? Is that part of your equation?

Mr. GUIMOND. I don't think that there is a specific—well, there's a provision for it, but if we have a specific thing for ranking it on there, I'm not quite sure.

Senator SMITH. The reason I ask the question is that on military installations, as you're probably aware, sometimes the material is housed there in pools or——

Mr. GUIMOND. That would not be the issue. It's going to be a question if there's a—like, at Portsmouth, for example, where they do nuclear sub work and things like this, they have pools of spent fuel or things along those lines, that would——

Senator SMITH. Which is a practice. It's something that's done.

Mr. GUIMOND. Yes. It would be if there was actual contamination carried, if they had found that out there in the ground water, if they had found that out there in surface contamination, if they found that out there somewhere.

Senator SMITH. So the fact that it's there in a surface pool would not in fact be a detriment necessarily in terms of the ranking?

Mr. GUIMOND. Yes. No, it would not be a detriment.

Senator SMITH. Just one final question. You mentioned there would be some advantages to being on the list. What about the down side?

Mr. GUIMOND. Well, I think Senator Lautenberg gave you a fairly good list of some of the down sides people have articulated to us. They somehow believe that it's going to be a stigma for bringing new business in, a stigma as far as selling housing or exchange of property——

Senator SMITH. Being on the list?

Mr. GUIMOND. I'm sorry?

Senator SMITH. Being on the list?

Mr. GUIMOND. Being on the list, yes.

Senator LAUTENBERG. For instance, let's say there's a shopping center, and next to the shopping center is the Superfund stuff. If that gets advertised, it's decidedly negative.

Mr. GUIMOND. What you were asking was the negative?

Senator SMITH. Yes. I didn't make my question very clear, I guess. The point is when you go on the list, it's better to be on the list and have the public know and be aware, obviously, but being on the list in and of itself, if there is other—like RCRA—other means being used to clean it up, I'm just trying to get at what the advantage of that would be.

Mr. GUIMOND. Well, like I said, in some cases folks have believed that it's been an easier way for them to access resources from whatever agency happened to be the one, if you're a Federal facility or if in fact you're a non-Federal agency, a private one. Now, however, other kinds of—remember, the fundamental plan, I think, of SARA was to try to take a look at both our Federal facilities and non-Federal facilities. If there are some serious problems here and if they warrant heavy identification, we would then identify those for the National Priority List. That would be, then, a part of the most significant problems that we'd want to be focusing our primary attention on, our first priorities, if you will, and it's for that reason that I believe the fundamental rationale.

You raise a good point. If there are other vehicles, you want to consider that as a deferral from this. I think that's one point that

we're looking at in the agency, thinking about that. That's something that's been suggested to us, that there may be not just for Federal facilities, but for non-Federal facilities, if there is either RCRA or a State program or some other program, that those should go through those programs first. That's certainly an appropriate thing for us to discuss and see if that would be a better way to deal with it, and if so, that may be something that needs to be addressed in reauthorization.

Senator SMITH. Again, I think as you look at this specific situation in Portsmouth, perhaps you might want to take a look at some of the previous military installations where RCRA was working along the clean-up line and you did place it on the list, did this in fact increase your cost, make it more difficult, or did it help? I'd be interested in knowing that. It would help me to formulate my position.

Mr. GUIMOND. That's a fair question.

Senator SMITH. Thank you.

Senator LAUTENBERG. Thank you very much. We now invite the second panel and dismiss the first one, with our appreciation.

We welcome you, Dr. Clark, Dr. Greer, Mr. Pierle. We invite you to give your testimony. Watching the clock in this case is an honorable thing, to be a clock watcher, and we give you five minutes to summarize your testimony. If you run a minute over, we're very tolerant.

Dr. Clark?

STATEMENT OF H. EDWIN CLARK, II, PRESIDENT, CLEAN SITES, INC., ALEXANDRIA, VA

Mr. CLARK. Thank you, Mr. Chairman, Senator Durenberger, Senator Smith. My name is Edwin Clark. I'm President of Clean Sites, a non-profit, public interest organization dedicated to accelerating and improving the clean-up of the Nation's hazardous waste problems. We appreciate very much the opportunity to testify before you this morning.

As you're aware, our board of directors, which includes leaders from most of the primary stakeholder groups involved in Superfund sites, has for the past year, been addressing the very issues you've raised in this hearing today. We expect to be issuing our final recommendations and findings in the Fall.

All of us are aware that the Superfund Program has been extremely contentious throughout its history. Indeed, few public programs have stimulated debates as intensive, extensive, emotional, and acrimonious as the Superfund debate. Recently, however, this debate has generated a similarly remarkable degree of agreement. Everyone—business, environmental groups, Congress, community organizations, the administration, even the President himself—seems to agree that the Superfund Program is not working the way it should. Some agree on what those problems are, but few seem to agree on exactly how they should be solved.

I might interject here that over the last few weeks I've been very encouraged to see that situation change. Largely because of the good work put in by such people as my co-panelists, we are reaching some agreement.

Clean Sites, along with Congress, the administration, and other organizations, is grappling with the challenge of finding elements of harmony among this discord. One important area of agreement, I believe, is with respect to the three goals of the program. I think most people agree that the clean-ups should effectively eliminate any unreasonable risks to public health or the environment from the contaminated site. The clean-ups should proceed as rapidly as possible, and the clean-ups should be cost effective.

The intensity of the concerns being expressed about the program certainly suggests that not all of these goals are being met. It is not clear in the cacophony of complaints where the biggest problems lie. Are we seriously missing all of these goals, or are we missing some more than others?

For today's hearing, the staff at Clean Sites examined criticisms commonly cited about Superfund, focusing on concerns about the remedy selection process, and asked whether each criticism is a problem because it increases risk to the human health and the environment, decreases the speed of clean-up, or increases the cost of clean-up. We have attached a table summarizing this analysis on the back of the written testimony. It leads to two observations.

First, very few of the criticisms relate to increasing risks to human health or the environment. Thus, it appears that, given available technologies, the Superfund law is working to reduce risk to human health and the environment.

The second observation is that most of the factors that serve to increase cost, an issue of substantial concern to the PRPs, also result in delaying clean-up, a concern to everyone.

Beyond these generalizations, I would like today to discuss briefly some of the specific problems we have seen at sites or have heard voiced about the Superfund process. One concern that we have testified about previously is that the future use of the site and associated resources is not explicitly considered early enough in the remedy selection process. In some cases, not taking this into consideration could result in increased risk if the future use, for instance, is incompatible with or violates the integrity of the remedy action. But more frequently we are seeing that the failure to consider future use is unnecessarily increasing the cost of remedy activities and delaying or preventing the subsequent return of the site to beneficial use. In this regard, we applaud EPA's announced intention to incorporate future use into the remedy selection process, and we hope that EPA will fully involve the public and local government in this process.

Our second concern is that the remedy selection process often fails to adequately consider short-term risks associated with a proposed remedy. For instance, at one site where we are working, the proposed remedy is to remove substantial amounts of contaminated dirt by truck. The contaminants in the dirt present very low risks to life. However, the heavy truck traffic which the removal operation will generate is a high probability of causing fatal accidents. Statistically, a complete clean-up of this site can be expected to cause more deaths than it will save. We believe that it would be a good idea, in the remedy selection process at every site, to evaluate the short-term risks associated with the proposed action with the same degree of thoroughness that is used for long-term risks.

Another common concern is the cost and delay that the ARARs requirement imposes on site clean-ups. I think there is increasing agreement that by eliminating the RARs requirement (the "relevant and appropriate" requirements), clean-ups would be guided by those regulations that are truly applicable at each site and by the actual risks. This would ensure the protection of human health, while eliminating extraneous clean-up goals that currently drive up costs and slow clean-ups.

Finally, we cannot overemphasize the importance of improving the overall risk assessment process. Inadequate information on toxicity, bioavailability, and exposure can result in underestimating some health and environmental risks. Often, however, these inadequacies stimulate the use of extremely conservative risk assessment assumptions which delay the process as the parties argue over the assumptions. And these assumptions also substantially increase the clean-up costs.

In conclusion, returning to the analysis of criticisms we undertook, the correlation between the high cost and excessive delays may provide an important opportunity for Congress. This correlation suggests that improving the one problem—i.e., reducing the cost—might help solve the other. If so, the Nation could proceed much more expeditiously in addressing the thousands of sites that still await action and, as they wait, may be creating significant health or environmental risks on their own. Thus, solving the problem of high cost could help us meet all the goals of the Superfund Program.

Thank you very much.

Senator LAUTENBERG. Thank you very much.

We'd like to hear now from Dr. Greer, please.

STATEMENT OF LINDA E. GREER, SENIOR SCIENTIST, NATURAL RESOURCES DEFENSE COUNCIL

Ms. GREER. Good morning. I'm Linda Greer, Senior Scientist with the Public Health Program of the Natural Resources Defense Council. NRDC is a private, not-for-profit, public interest environmental organization with over 170,000 members nationwide. NRDC participated in the original authorization of Superfund in 1980, as well as the act's reauthorization in 1986. We have also overseen the implementation of the Superfund Program since its inception.

Although the most widely proclaimed problem in Superfund is the alleged fact that too much money is being spent on lawyers, issues surrounding remedy selection are, in my opinion, more responsible for the program's stumblings. Further, of all the problems facing the Superfund Program, issues surrounding remedy selection clearly are some of the most intractable.

Perhaps the single most important factor limiting debate in Congress and in the public on issues related to remedy selection to date is an almost complete lack of systematic data on the way that EPA actually selects remedies in the field today. In the absence of systematic data collection and policy analysis, the debate about remedy selection has been ill-informed and based nearly exclusively on anecdotes of site-specific problems.

In light of the paucity of existing data and analysis, I urge the subcommittee to analyze for itself the problems in remedy selection prior to attempting to solve problems that allegedly exist in the program without sufficient basis to conclude that the problems identified are both real and widespread.

On ARARs, in 1985 and 1986, when Congress was reauthorizing Superfund for the first time, it was faced with a disturbing lack of consistency in remedy selection in the program. Given EPA's extremely slow track record in standard setting and because it seemed to make sense for clean-ups in Superfund to be consistent with requirements on the books where similar circumstances arose, such as safe drinking water standards for contamination of a potential drinking water source, Congress directed Superfund remedies to meet applicable, relevant, and appropriate requirements. However, without question, ARARs has not delivered the consistency and confidence in remedy selection that the environmental community expected.

This situation is obviously frustrating to industry, and it's also frustrating to the environmental community for reasons that are described in my testimony. However, as with nearly every issue in Superfund, the key to solving the problem with ARARs lies not with simply identifying that a problem exists, but in developing an actually better alternative. Despite their limitations, ARARs clearly cannot be eliminated from the statute without substitution, since this will lead only to greater inconsistency in remedy selection across the country, frustrating both citizens and industry alike.

NRDC proposes that Superfund's statutory ARAR requirements be substantially revised and replaced with national soil and ground water standards. Key elements of our proposal are as follows: that EPA would be directed to develop soil and ground water standards by a date certain for the 100 most frequently occurring contaminants in the program, and that these numbers be keyed to future land use. The agency would develop at least one set of numbers that assumed future unrestricted residential land use and additional numbers for sites where ecological protection is of concern. Where future use was to be restricted, such as an industrial site that would remain industrial in the future or be developed into a park, EPA could develop clean-up standards either consistently or on a case-by-case basis.

Under our proposal, there would be at least one statutory presumption about future land use in the program. Sites in residential areas would be presumed to be residential in the future and require clean-up to levels that would be protective, without regard to type of restriction put on the land. However, there would be local control over the land use decision made at a site in that the statute would allow for local override of the statutory presumption, given certain conditions.

EPA clean-up numbers would target a single risk level rather than allow for a risk range, thus eliminating the 100-fold difference in acceptable clean-up numbers across the country. Soil numbers would be required to reflect hazards posed by multiple pathways of concern, and where States had more stringent standards for soil or ground water that had been promulgated for remedial situations,

these more stringent standards would be applied instead of the Federal numbers.

This proposal, by the way, is consistent with the discussion we had earlier of separating the "A" from the "RARs" in ARARs—"applicable" from "relevant and appropriate."

Several issues in our proposal merit additional consideration and are under active discussion in the environmental community, including especially the reliance on restricting future land use when setting clean-up levels. Reliance on restrictions and land use to deliver protection from the hazards posed by hazardous waste raise a number of critical issues that simply must be resolved prior to the adoption of this approach. Let me give you a few of those.

How should the neighboring use of a site be considered when determining future land use of a site, and what criteria are appropriately used in deciding this? Assuming some sites will be cleaned up to less protective standards, should communities be compensated for the fact that the land within their jurisdiction has been encumbered? How should conflicts be resolved concerning future land use of the site, particularly if nearby neighbors oppose a restricted use classification while others more remote support it? What are the appropriate mechanisms to restrict future inappropriate use of the land, and who would hold this restriction?

There's also been considerable discussion today about the statutory preference for permanence. In the debate surrounding the reauthorization of Superfund in 1986, the environmental community put great emphasis on the need to greatly enhance these permanent remedies at Superfund sites. We believe that containment provides no more than a short-term, band-aid solution to long-term, festering contamination, that we were technically incapable of designing a containment that would not ultimately leak, and that society was institutionally incapable of either ensuring that contained facilities would be properly maintained or that the land would not ultimately be put to use for a purpose inconsistent with its contamination levels.

Where do these things stand seven years later? Not much has changed with regard to the limitations of containment. Attached to my testimony, for example, is an EPA list of 24 hazardous waste sites in Region 7 that were recently flooding during the Mississippi River's well-publicized floods. There were numerous adverse effects of the floods on these sites. Nearly all the sites were partially or totally submerged, drums were washed downstream, in situ treatment processes were underwater, et cetera. Clearly, it does not take an advanced technical degree to realize that waste "isolated" at such sites, using clay liners and covers for long-term protection, would be unlikely to remain in place during and subsequent to this flood.

Flooding is not the only problem we face with caps, however. Several caps have reported problems with leachate either breaking through the surface of the cap or continuing to grossly contaminate the ground water. For example, the cap at the notorious Stringfellow acid pit site in California teaches us an important lesson about the short-term nature of containing hazardous materials on-site. The five-year drought in the State of California has recently ended, and as a consequence the ground water level in the State has risen.

This rising ground water has caused the Stringfellow cap to split on several recent occasions due to ground water surging up into the contained waste and bursting through the surface. As a consequence, the neighborhood around Stringfellow must once again be concerned about rainfall washing contaminants from the dump into their community.

Senator LAUTENBERG. We have your full statement for the record, and we are, as you can imagine, kind of pressed for time. If you can wrap it up now, fine; otherwise, we'll just include your statement.

Ms. GREER. I'll give you just our suggestions for statutory language on permanence and wrap it up. It should take only another minute.

We think that the statutory preference for permanence should be maintained. We think that the statute could specify, though, where treatment was preferred at Superfund sites with highly contaminated material and also at sites that will be used in the future for unrestricted or residential use. We think the technological feasibility wavier language is important to maintain, because there will be situations that cannot be permanently remedied because of a lack of technology. We think the statute should require a very beefed up monitoring and reporting regime for contained facilities to address some of the problems that we have uncovered with long-term operation and maintenance facilities. And the statute should require EPA to develop performance and operating requirements for the treatment technologies that are applied at Superfund sites, much like the current standards for incinerators. With that, I'll conclude my testimony.

Senator LAUTENBERG. Thank you very much.

Mr. Pierle?

STATEMENT OF MICHAEL PIERLE, VICE PRESIDENT, MONSANTO CORPORATION

Mr. PIERLE. Thank you, Mr. Chairman, and Members of the committee. I am Vice President of Monsanto Company and cover the areas of environmental safety and health. While I appreciate the references previous to Monsanto's testimony, I am here today representing not only Monsanto, but also General Electric, WMX Technologies, and the Atlantic Richfield Company. All of us are participating in the NACEPT process with EPA, trying to find constructive improvements to the Superfund Program. We welcome the opportunity to testify before this subcommittee today, and we would agree that remedy selection is indeed a very important part of this program.

In the past 13 years, the four companies collectively probably have more experience than they would like with this program, but I think it suits us well to be here today. During the first 14 years of the program, the companies have spent about $100 million a year. Our projections for the next two years would raise that investment to over $200 million a year. So we do see definitely a step change in the costs associated with this program.

Now, what I would like to do is briefly describe some of the problems that we believe we are faced with in the program, talk about

our proposals—and we believe in fact that they are solutions to the many problems that we currently face—and to describe, then, the benefits that accrue, we believe, to all of society as a result of these changes.

I think it's safe to say that the general perceptions of those involved in the Superfund implementation, as well as the general public, is that it's wasteful and it's ineffective. We believe this perception is in fact accurate, especially with respect to remedy selection. It's clear to us that the current selection process is not merely flawed, it is broken.

Under this program, we have witnessed the repeated selection of inappropriate remedies and implementation of those remedies at an excessively slow pace. Moreover, the costs of remediation are rising at alarming rates. The program, when begun, had an average cost of $7 million per site. The average now is said to be $26 million, and I would suggest that that's a low number, and the costs are going to $40 million to $50 million per site. That's probably a more accurate for many sites today.

The flaws in the current remedy selection process which flow from the statute itself undermine, we believe, Superfund's fundamental goal, which is the expeditious abatement of significant actual risk to human health and the environment. Specifically, the statute's preference for treatment-based permanent remedies and the requirement to meet ARARs have consistently led EPA to select the wrong remedy for a particular site. It's usually one that is inordinately more expensive than the other remedial options, without providing any additional protection of human health or the environment. We believe that the EPA risk assessment methodologies are skewed, and this compounds the problem created by the statutory provisions, preventing true characterization of risk posed by a site.

The overall result is a very cumbersome process and stalled clean-up actions. Our written testimony includes several examples and additional analytical information that illustrates these problems with the current process.

Given that Superfund's fundamental goal is being undermined by the flaws in the statute, we do believe that legislative changes, not marginal administrative reforms, are needed for meaningful change in the program. In short, while many aspects of the Superfund Program deserve Congress' careful attention in the reauthorization process, legislative reform of the remedy selection process must be the cornerstone of any attempt to change Superfund in a way that gets on swiftly with the business of protecting human health and the environment and avoiding delays and excessive costs currently in the program.

How can the program be improved? We've provided in significant detail our suggested improvements. They are intended to provide fast remedial actions which ensure protection of human health and the environment at more sites and at a lower overall cost. The proposal achieves these objectives by moving to a system that provides clear and workable health and environmental standards; it simplifies the remedy selection process based on the 13 years of program experience we all have gained; and, third, it would reflect the ad-

vances in 13 years of development of risk assessment methodologies.

Specifically, the proposal would establish meaningful and workable standards for protection of human health and the environment, and those would apply at all sites across the country. It eliminates the preference for treatment-based permanent remedies in the ARAR requirements. They've proven to be more of a burden than a help, in our estimation, and it's time to remove them from the statute. The proposal requires EPA also to develop and implement revised risk assessment procedures, using site-specific data and reasonable assumptions regarding exposure and toxicity, and the proposal provides for a more streamlined process which will result in less PRP resistance to the remedy selected and speed up the implementation of remedial actions for protection of human health and the environment.

I might add that from the listing of a site today, estimates vary, but they generally range from eight to ten years before action begins. Under our proposal, action would begin within three years.

What are the benefits? We believe they're significant. They're difficult to quantify. The Congressional Budget Office has estimated that Superfund appropriations could be reduced by more than $2 billion over five years by adopting the reforms along the lines suggested in this proposal. These reforms basically are improvements in the cost of remedy and do not include savings that will also accrue associated with the streamlined process.

Additional benefits would result. We think more remedial actions would be undertaken, would be completed in a faster time. The cost of the remedial actions would be substantially reduced. The public's confidence, most importantly, would be improved, because we contemplate significant public involvement in the process, and the Nation's productive capacity would be enhanced, because we would be putting our money against the most appropriate problems.

This summarizes the written testimony we've submitted, and we are prepared to answer questions.

Senator LAUTENBERG. Thank you very much.

Mr. Pierle, your testimony requires clean-ups—I quote here—"to a level that's likely to be without an appreciable risk of deleterious effects for the exposed populations." Can I ask you to define that a little more clearly?

Mr. PIERLE. In the proposal we made with respect to standards, we have differentiated between standards for materials that may be or are suspect carcinogens and those which are not, and I believe the paragraph you read refers to exposures to materials that do not fit what would be the higher hazard category. Typically, in the establishment of standards under other environmental programs as well, you are able to extract from studies, toxicological or human, no observable effects levels, and then provide some margin of safety to that, and we think for that body of materials that one could establish fairly uniform health standards that would provide the prescribed degree of safety.

Senator LAUTENBERG. I heard you say that clean-ups beyond the initial removal phase should only occur when added benefits outweigh added costs, but costs are often much easier to estimate than

benefits. Would you consider indirect or contingent benefits, aesthetic improvements? How about economic impacts, like the value of a fishery or an agricultural facility?

Mr. PIERLE. I think what we have outlined in our proposal is that the first step should focus on protection of human health and that the appropriate test there is really a cost effectiveness test in choosing the treatment or containment option. As one moves in, then, to the next phase, if additional treatment or improvements are required to protect the environment, then there would be a cost-benefit test at that stage.

We have not fully discussed the full inclusion of items that would be under cost and be under benefits, but clearly we would understand that the benefit test would have to include some assessment of both direct, financial, tangible benefits as well as others that are more difficult to describe.

Senator LAUTENBERG. Could you see the aesthetic value of a given property as being significant to a community or to a region that goes beyond the direct measurement of health risk?

Mr. PIERLE. Senator, we have not discussed that fully within our group. What we would contemplate, though, in the decision process would be a full participation of the local communities at the local level in setting land use requirements for facilities, and I would contemplate that those issues would arise and be discussed and resolved at that level.

Senator LAUTENBERG. OK. Because the economic impact of a lost facility as a result of environmental degradation could be terribly significant, and I think it kind of gets you beyond the simplest definition, though it's the number one requirement, and that is to protect human health.

You've also advocated, as have several others, improving the risk assessment process. Given a choice, would your changes err on the side of overestimating risks or, let's say, underestimating them, and who ought to bear the burden of the risk? Should the public or the industrial party responsible?

Mr. PIERLE. The changes that we are proposing to the risk assessment process would still provide clear, adequate margins of safety. They would be more conservative than what is used today, but I think they would still err on the side of providing safety.

With respect to the question of who bears the continuing risk or the liability, if the remedy does not provide for an unrestricted use of the property, we contemplate that liability would remain with the original party or parties, and this gets to the question, I think, of do you have proper safeguards for institutional controls and other parts of the remedy that may be appropriate.

Senator LAUTENBERG. Dr. Greer, do you believe that the statute currently can protect the PRPs from having to undertake extremely costly or attempt impractical clean-ups of the DNAPLs?

Ms. GREER. Yes. I actually think that the statute is perfectly well constructed to deal with technical and practicability issues in that it requires that ARARs be met, but then specifically provides situations where ARARs need not be met, including technical and practicability.

I would agree with industry that those waivers have been extremely underutilized in the program to date, but that's not due to

a problem in the statute. I think that's due to a problem in implementation, and EPA, at least with regard to DNAPL sites, has now taken the initiative to try to expand the use of technical and practicability waivers by setting out guidance saying, "We expect to see these sorts of waivers in DNAPL sites" and those sorts of things.

So not only do I think that there is adequate flexibility in the statute to address that right now, I actually think that the agency has put into motion changes that indicate they're doing it right now.

Senator LAUTENBERG. Dr. Clark, you point out how important it is to improve the risk assessment process. How would you do it, and what should EPA do at sites where the hard data aren't there to use?

Mr. CLARK. Well, there are, I think, two elements. One is, as Mr. Pierle and Dr. Greer said, we are using the same basic risk assessment process in this program as we use in all the other programs. There is an ongoing process of trying to get better information about the dose response curves, about what the risks really are, and other things like that.

I think the changes that could be made quite quickly are, one, relying more on site-specific risk information, particularly exposure information, deciding what you should do, for instance, if your risk assessment predicts that there should be high lead blood levels, but none are found, or in one case we're involved in, that there should be high arsenic levels, but none are found. How do you take that actual information into account? Right now what they do is tend to assume that the predictions are correct rather than the actual measurements. I think there is a lot of opportunity for doing better measurements on-site to get actual exposure levels.

Senator LAUTENBERG. Now, that doesn't suggest a better process, it just suggests more careful monitoring.

Mr. CLARK. That's right. It's partially the process, and it's partially the monitoring. The process of coming up with how much risk does five parts per million of isopropyl pooh-pooh create is an issue that there are a lot of people working on and trying to improve, but I think the most direct or quickest improvements could be at the sites, and then using the land use assumptions for developing reasonable levels of exposure.

Senator LAUTENBERG. Mr. Pierle, you'd allow a PRP to leave hazardous waste in place and allow less clean-up if the site is being used for industrial purposes. Who would pay for finishing the clean-up later? One of the problems that we've discussed this morning is if the land is used for a different purpose. Or would we get more efficient clean-up technology that can permanently get rid of the waste? If there's a change in the land use, if the original purpose doesn't endure, who ought to pay for that?

Mr. PIERLE. We have studied the question of what happens next on a variety of changes, and you get into sort of an endless what-if set of conversations, but that's at least one we have thought about, so I'm glad you asked the question. Our sense is that there would be a retained liability at a site relative to an industrial land use by the PRP or the joint PRPs, or, I guess, in the case if it was a fund lead site total and it was only fund monies, the fund would retain that liability.

With respect, then, to a change in the intended use—let's just say we were moving from an industrial to a residential use and a developer wanted to come in and develop that site—it seems to us that that's a separate business transaction, that the benefits that would accrue relative to the development of that site should be part of the business transaction and made with those that are retaining the current liability. We would not see, for example, that those that retain the liability clean it up to residential use levels, and for all that benefit then to accrue to a different party who would get ownership of the site.

So we see the two as really two separate business transactions. It's very difficult to describe all the facts or sets of situations that would occur, but on an upgrade, we would see the very distinct possibility of value being created and that value being applied in part to reducing the risk.

Senator LAUTENBERG. And negotiate it.

Mr. PIERLE. Yes.

Senator LAUTENBERG. Interesting.

Dr. Clark, you were pretty specific about the ARARs and your wanting to drop three parts of the four. Does this requirement not serve a purpose in protecting human health and the environment?

Mr. CLARK. Clearly, the ARARs don't diminish the human health and environmental protection that's provided, but I think they do create substantial delay and potential confusion and probably substantial increased costs, without accomplishing any significant improvement in the protection.

Senator LAUTENBERG. Dr. Greer, do you agree with that?

Ms. GREER. Well, as I stated in my testimony, I think that the ARARs do have problems, but so do a lot of alternatives. The key to solving this is to decide that you've seized on something that's going to work better than ARARs, because what ARARs do deliver us, if applied correctly, is an ability to make things internally consistent with what the agency does in other programs. We are very open to substituting something else for ARARs that we think will give us more protection and more consistency, but I don't think that the ARARs are worthless, and faced with having nothing, I would strongly prefer to maintain ARARs unless we can find a proper substitute.

Mr. CLARK. I think that everybody, as I understand it, agrees that we ought to retain the "A"; it's the RARs that are the question.

Mr. PIERLE. I thought ARARs stood for "any regulation, any rule." I get confused by the alphabet soup as well. But we clearly see that particular part of the statute as getting in the way of the timely decisionmaking that is necessary at most of the sites. So to us it's a question of—it's a hurdle that needs to be knocked down, and all that can be—you have to knock all those hurdles down before you can get the final decision, and we think by knocking them out at one time, you can still achieve an acceptable risk remedy and do that much faster.

Ms. GREER. Excuse me. One interesting fact is that we don't actually know right now in how many cases was ARARs driving the remedy, in how many cases was it the site-specific risk assessment, and how many cases was it something else, like the statutory pref-

erence for permanence. Without knowing, we don't really have data to indicate where is the real problem here. So what all of us have done is targeted improvements in all three of those areas, but we would very much be served with some information that indicated how often which one of those areas drives the actual remedy that's selected in Superfund.

Senator LAUTENBERG. Thank you very much.

Senator Smith?

Senator SMITH. Thank you, Mr. Chairman.

Mr. Pierle, I'd like to compliment you and your colleagues in the industry—ARCO, GE, WMX, and yourselves at Monsanto—for what I think is a very thoughtful document that you provided us. I have not read it all in detail, but I've had a chance to get through it enough to see that it's certainly welcome for this Senator, because you are the folks out there in industry, as well as communities, who are dealing not only with the Superfund law, but also dealing with the environmental problems, and on your own as well, and I think that oftentimes the feelings of some in the bureaucracy and some in the Congress is that it's one versus the other, not one with the other, to deal with this problem.

You say it's a statement, what you label it, but it's far more than a statement. I think it's a very thoughtful proposal and one that I welcome. I know, having had the opportunity over the past several months—last several years, really, but most specifically the last few months—to talk to people in industry as well as in the community in my State, many of the things that you say here are exactly what are being said by others. So I think that it's something that this committee and Members of us in the Congress ought to look very carefully at.

Having said that, one point on page 22. You say that the proposal provides for a more streamlined process and will result in less PRP resistance to the remedy selected. Could you just elaborate on that a bit? Why would there be less—what is in your proposal, in your recommendation for change of law, that will result in less PRP resistance? Obviously, PRPs are—it's in their nature to resist. They're going to be part of a clean-up process in terms of the cost, but there's also an opportunity for them to participate as well. So just tell me, if you can briefly, why there would be less resistance from the PRPs as a result of what you would suggest doing.

Mr. PIERLE. I think there are two primary examples—if we can get cost reduced in the program, I think resistance goes down, and cost eliminated that is not aimed at the goal of the statute, which is protection of human health and the environment, so generally that's what we targeted to look for.

Where can you get costs out of the program that are not really adding value and protection to the program? One of the areas is back to the question of permanence, and while I think permanence has a noble sound to it, in actuality and practice what it has is a very—it extends the process significantly and the debate over what might be a permanent remedy: Is there technology to achieve permanent remedies? Is the technology proven? Is it cost effective?

So it is a long debate around just the concept of permanence that you have to get through at each site, and by removing that hurdle—because in most cases permanent remedies are not avail-

able today, we do not have the technology—you lower the hurdles, and the process can move faster.

Senator SMITH. What about definition of liability? Isn't it a fact that one of the concerns of industry is that we can't seem to get a definition of just what the liability is, who the PRPs are? We can identify the ones that have a mark on the can, but there are those that there aren't any marks and they were participants, but somebody else is stuck with the tab. How do you deal with that in your proposal?

Mr. PIERLE. Well, in this proposal, we do not deal with that, but I think we'd welcome the opportunity to come back and talk about liability, because there is a companion proposal that works with this.

Let me comment on the second aspect of what causes delays. Quite frankly, there is a very protracted review and oversight process relative to the submission of plans, reviews at 30 percent design stage, 60 percent design, 90 percent design. There's an enormous amount of oversight in this process which simply just extends and adds cost to the program. So in the remedy selection proposal that we have, we have articulated a plan and a set schedule that would reduce, as I say, and collapse several years of debate into three years or less. So both the permanence and the process improvements for decision would speed up the delays that are in the current program.

Senator SMITH. In essence, what you're saying, as I read your proposal, is that there are two key factors, health and environment. The immediate health factors or health risks looked at first, followed by the environmental clean-up second, given the limited resources, and your conclusion is that in all cases, in every case, is not being done. Not in some cases, but overall is not being done, which is why the program is not doing what it's supposed to do. Is that fair?

Mr. PIERLE. That's correct, because I think one of the most important aspects that we need to consider in the program is time to results, and the risk that is unabated over a period of time in which one is debating issues means that risks are going unabated. So time to results is absolutely important in this overall program.

Senator SMITH. So speeding up the clean-up, if you will, is cost effective, I guess is what you're saying, obviously, because then you can use the property again and go on to whatever the use would be.

Just as a final question, if you could do it—you did have a couple of examples in your proposal, but if you could take one example and walk me through it as to how, using a specific example, you could speed a clean-up up at a Superfund site, just four or five steps or whatever, so I can see how you would do that. In terms of your proposal, how would you take a site, speed up the clean-up, and what changes are you making to the law to do that more effectively than we're doing it now?

Mr. PIERLE. The site I think that you refer to I believe is on page 19 of the written testimony that describes two sites, and we've done this by comparison in this process. One site has been remedied under a State set of rules and regulations, which do not include the permanence requirements or the sort of recycle work process that's

included in the current Superfund program, and that site's activities began in 1989. Four years later and after expending $6 million, the site was basically rendered safe.

At a companion site that was on the NPL and subject to the Federal statute, started at about the same time—well, actually, even earlier; started in 1985—after 11 years at this site, now a forecast of $65 million, they're just contemplating beginning the remedy selection process.

I think we have heard in other settings the States seem to be moving much more expeditiously on remedies and remedy selection, and I think, again, the hurdles within the statute which cause the delay are basically the permanence requirement and the process requirements, the oversight and review that extends significantly the review of projects.

Senator SMITH. Thank you.

Mr. Chairman, that's all the questions I have.

Senator LAUTENBERG. Thank you very much, Senator Smith.

Senator Durenberger?

Senator DURENBERGER. Thank you.

Mr. Pierle, has Monsanto been a PRP at any site that might have been affected by the recent Midwest floods?

Mr. PIERLE. I have not seen the testimony that's been referred to here, so I have not seen the list of sites. I would need to look at that, Senator. None have come to my attention to date.

Senator DURENBERGER. OK. Well, maybe you can do that and give me some indication, if you will, what impact floods might have had on the remedies that were selected at those sites.

Let me also ask you about Stringfellow. You said you're here representing four companies. Dr. Greer already indicated that the cap at that site has been damaged by rising ground water levels, and since this relates to the efficacy of the containment strategies that you recommend over the long run, I wonder how you view developments at Stringfellow either in general or in the specific, if one of the four are involved there as a PRP?

Mr. PIERLE. I'm not familiar with the specifics. I've not visited the site. We are not, as a company, a PRP there, and I'm not sure whether any of the other three companies are or not. We didn't systematically talk about each site. I have been in conversations that have been more casual relative to that site, and the sense I come away with is that with a proper understanding of the engineering around the site, that improved remedies could have been designed there and will be designed.

The second comment I would make with respect to Stringfellow is that the sense I have in talking with some people that have lived around the site is that anything that would approach a permanent remedy or a removal or a dig-up-and-haul is not supported now within the community because of the attendant risk that would be associated with that type of an action.

Senator DURENBERGER. Would you do me a favor and check and see if somebody like ARCO is involved, if somebody has the specifics of that, and then try to get more specific in your response to that, or even their response to it, if there's somebody more knowledgeable, and then set that in the context of what you're recommending in your statement for long-term remedies.

Mr. PIERLE. I'd be glad to do that, sir.

Senator DURENBERGER. Great. Now let me talk to you about this interesting concept that clean-up requirements be tied to future land use. I guess you're recommending we do a risk assessment based on likely future uses of the site and pathways of exposure that might occur at that site, and the obvious is that exposure is likely to be much less if the land is managed as an industrial site than if it's a residential, for example, and, therefore, if I follow the logic, less extensive clean-up might be justified.

Suppose a PRP has an old landfill or lagoon and decides to permanently retire the land from use. I mean, the PRP just plain decides to retain ownership, put up a fence, put on locked gates, put on a guard maybe, just deny access of people to the site. What would the risk assessment look like in that case? Would any clean-up be required in that particular situation?

Mr. PIERLE. I think it's clear in our proposal that we do not contemplate padlocks and fences and guard dogs as an acceptable containment remedy for sites. Those do not get at potential pathways dealing with airborne releases or potential ground water releases, so it's pretty clear to all of the companies that have discussed this proposal that that's not an acceptable walk-away scenario. The site would have to go through a risk assessment, and I guess if there was nothing leaving the site and there were no exposures, that's a possibility, but that may be difficult to conceive as being really a probability.

Senator DURENBERGER. Mr. Clark, your testimony also includes the suggestion that future land use be taken into account, and in the clean-up context, that makes some sense. Why spend billions of dollars to restore ground water if nobody's going to drink it? I hate to oversimplify this, but I guess that sort of characterizes the logic. I've always worried, though, about the notion of my generation, which is already spending the corn seed of the future, classifying ground water according to our needs and contaminating it up to levels that we can live with, and then passing all of that on to some new generation that may well have very different needs.

We have made some effort as a Nation to prevent ground water contamination. You were at the Conservation Foundation when it published that really thorough report on ground water problems. Tell me, how can we justify rules that require people to install liners at landfills or carefully manage fertilizer and pesticides, when at the same time we're classifying lands as industrial so that clean-up costs under Superfund can be reduced?

Mr. CLARK. The ground water issue, I think, is one of the bigger issues surrounding the resource use proposal. We are not proposing that water that could be used or is classified for drinking water uses be abandoned. This is where you have to look at the future use and what is a reasonable future use. We are not suggesting, for instance, that the PRP would just decide what the future use is. This would be a decision that would involve the local government, the State, the community, everybody around.

There certainly are instances where, because of low permeability or because of natural contamination—high salt contents and things like that—it's highly unlikely that this ground water would ever be used for drinking water or that there are plentiful alternative sup-

plies. That was the case, for instance, when I was in Delaware. But you would have to look at each site individually and involve everybody in the decision as to what the possible future uses and desirable future uses of these resources are.

Senator DURENBERGER. I'm just dealing—and maybe both of you can respond to it—I'm dealing with the perceived logic of Monsanto not having to clean up disposal sites or pesticide manufacturing residue because the lands are classified as industrial, but all the farmers out in Minnesota are required to protect ground water from Monsanto pesticides on lands that are classified agricultural.

Mr. PIERLE. I guess we'd like to think that our herbicides are soft on the environment, and we'd be glad to discuss that with the Senator. I think this is a legitimate public policy question and one that we have thought about in the broad context. It is a question of moving forward now and getting results in the next 10 years versus trying to debate what the long-term needs and uses will be, and I guess where we came down stems from the frustration that nothing is happening now and we need to focus a proposal on getting something going.

As you say, there are significant protections in most of the cases on ground water contamination, and this proposal does not preclude for those unrestricted land uses the possibility of coming back. As a matter of fact, it contemplates that there would be a continuous relook at sites such that initial remedies continue to meet their initial objectives.

Senator DURENBERGER. And I don't want to discourage any of you, because as I said in the beginning, I thought everybody's testimony was really very, very good and very, very thorough and, to varying extents, creative, and I think we ought to encourage that. My questions are just designed to ask a variety of what-ifs, and the bottom line here is I think both of us are really looking for solutions, but we want them to be solutions that work. The program has taken enough hits already, and we've got plenty of experience now, and now that we've got some creative suggestions, we'd like to see that it works.

So any questions we ask you and any responses you can give to questions we haven't even thought to ask you to follow out this logic I think will be very helpful to us.

Thank you, Mr. Chairman.

Senator LAUTENBERG. Thank you very much, Senator Durenberger.

With that, we thank the witnesses for your testimony. That concludes this hearing.

[Whereupon, at 12:33 p.m., the subcommittee adjourned, to reconvene at the call of the Chair.]

TESTIMONY OF RICHARD GUIMOND, ACTING ASSISTANT ADMINISTRATOR, OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE, ENVIRONMENTAL PROTECTION AGENCY

Mr. Chairman and members of the Subcommittee, I appreciate your invitation to appear before the Subcommittee today to discuss remedy selection in the Superfund program. First, I would like to provide some general background on the remedy selection process that EPA has established to implement the cleanup standards provisions of the current law and describe what our experience has been in implementing this process; and second, I will outline efforts we have underway to improve remedy selection under current law and regulation. Also, in response to concerns about the

current Superfund program, EPA is now leading an interagency review to determine issues for reauthorization.

GENERAL CLEANUP PROCESS

The law establishes four requirements for a Superfund remedy. Each Superfund remedy must: 1) be protective of human health and the environment; 2) comply with the applicable or relevant and appropriate requirements of other federal and state environmental laws (or ARARs); 3) be cost-effective; and, 4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Remedy selection decisions also must take into account the statutory preference for remedies in which treatment is a principal element. These broad and sometimes competing statutory mandates provide EPA considerable discretion to determine an appropriate remedy for a site; however, they do not clearly specify a single risk management goal for Superfund cleanups.

The Agency presented its interpretation of these remedy selection provisions in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), published March 8, 1990. The NCP, recognizing the wide variety of sites to be addressed under Superfund, establishes a process for remedy selection that focuses on a consistent approach to decision-making rather than achievement of identical solutions at all sites. The site specific risk management solution appropriate for any particular site takes into account a common set of considerations which incorporate factors included in the statute as well as practical concerns which have proven to be important in the program's operational experience.

Remedy selection under Superfund encompasses the site study phase as well as the choice of a cleanup approach for a given site. The study phase-consists of the remedial investigation and feasibility study. The remedial investigation includes field sampling to characterize the nature and extent of contamination, the baseline risk assessment to estimate the risks posed by the site, and treatability studies to assess the likely effectiveness of treatment technologies on site wastes. The feasibility study involves the formulation and analysis of alternative cleanup options. Alternative approaches are compared to identify significant tradeoffs among them.

One of these alternatives is then selected as the remedy in a two step process. An initial judgment is made as to which alternative provides the best balance of tradeoffs with respect to nine remedy selection criteria. This preferred alternative is then presented for public comment in a Proposed Plan. Following consideration of public comment and input from the State, a final decision is made and documented in a Record of Decision.

In selecting remedies, alternatives are first reviewed to determine whether they satisfy the first two of the nine criteria, which are the threshold criteria of: 1) overall protection of human health and the environment and 2) compliance with ARARs. Alternatives that do not satisfy these criteria are not eligible for selection.

Next, EPA compares alternatives with respect to the five primary balancing criteria, which are: 1) long-term effectiveness and permanence; 2) reduction in toxicity, mobility, or volume through treatment; 3) short-term effectiveness; 4) implementability; and 5) cost. These criteria (with the exception of implementability) are used to evaluate alternatives for their cost-effectiveness. Under the NCP, alternatives whose costs appear proportional to the overall effectiveness they afford will be considered cost-effective. Because alternatives have been developed reflecting different goals (e.g., treatment or containment), a simple "least cost" approach to cost effectiveness generally is not useful; for different goals, different alternatives will be considered most cost-effective.

The five balancing criteria are then used to decide which alternative appears to provide the best balance of tradeoffs. State and community acceptance, two additional criteria, can also be considered in the balancing, to the extent information is available at the time of the proposed plan. These two criteria are formally considered following a public comment period and may lead to modification of the proposed plan in final remedy selection. They are, therefore, considered modifying criteria.

It is through this balancing that EPA determines the most appropriate solution for a site. In judging which alternative is most appropriate—which entails establishing likely future land use, determining what portion of the site will be cleared of contamination, the cleanup levels to be achieved, the volume of waste to be treated, the type of treatment involved, and the amount of residuals that will need to be managed—EPA determines the degree to which permanent solutions and treatment are practicable for a given site, thus fulfilling CERCLA's fourth remedy selection mandate.

Three areas of remedy selection warranting additional discussion are permanence, ARARs, and risk assessments. These are issues that EPA is reviewing as part of its interagency reauthorization effort.

Permanence

The statutory requirement that remedies should use treatment to the maximum extent practicable needs some clarification. In recognition of the high cost of treatment and the mandate to select cost-effective remedies, as well as the uncertainties associated with long-term containment of highly mobile, highly toxic material, EPA chose to focus treatment on the most hazardous material at sites (those that comprise "principal threats"), while allowing containment of materials-that pose a relatively low level of risk. This emphasis is articulated in the expectations contained in the NCP concerning the use of treatment and containment. These expectations are as follows:

1) Treat principal threats, wherever practicable. Principal threats include liquids, areas contaminated with high concentrations of toxic compounds, and highly mobile materials.
2) Appropriate remedies often will combine treatment and containment.
3) Containment is considered for wastes that pose a relatively low long-term threat or where treatment is impracticable.
4) Institutional controls are most appropriate as a supplement to engineering controls for short-and long-term management.

Since the Amendments of 1986, EPA has signed 948 Records of Decision (RODs) at 642 sites on the National Priorities List (NPL) (as of March 93). These decisions range from minor actions like providing alternate water supplies to major response actions involving extensive excavation and treatment. Between FY 1987 and FY 1991, 72% of the source control RODs selected treatment. Treatment has generally been focused on "principal threat" waste. In that same period, 24% of the source control RODs selected containment as the primary component. Containment was selected for sites, such as municipal landfills or mining sites, where treatment was inappropriate or impracticable. (The remaining 4% were no-action or limited action decisions.)

ARARS

As noted above, the law requires that, upon completion, remedial actions attain the requirements of other federal or more stringent state laws that are "applicable or relevant and appropriate" under the circumstances of the release. EPA interprets this to require compliance with the substantive portions of the federal laws and any state requirements that are more stringent. However, ARARs only pertain to on-site activities. For off-site activity, Superfund cleanups must comply with all applicable legal requirements, both substantive and procedural. Generally, EPA uses chemical-specific standards, such as maximum contaminant levels established under the Safe Drinking Water Act, to define the cleanup levels at a site. Location-specific standards, such as wetlands and floodplain restrictions, limit certain kinds of actions in specific locations. Action-specific standards, such as many RCRA treatment or containment requirements, generally define the manner in which a specific action must be implemented.

ARARs have been used frequently. The Superfund program often refers to the requirements of other federal and state environmental laws to determine appropriate and protective remedial measures. For example, when cleaning up contaminated groundwater that is to be used for drinking, EPA generally relies on drinking water standards established under other federal and state laws to establish remediation goals. Similarly, when constructing a safe containment structure for hazardous waste management, the Superfund program generally looks to the standards promulgated under the federal Resource Conservation and Recovery Act (RCRA).

In certain circumstances, EPA has encountered some significant administrative and 'technical complications when complying with other laws. To a great extent, the difficulties have been encountered when Superfund remedies must comply with requirements that are not based on the risk posed to human health or the environment. For example, technology-based standards which were developed for waste streams may not translate well if applied to contaminated media. These standards may require treatment to levels that cannot be achieved cost-effectively for contaminated media. EPA also has experienced difficulties in complying with extremely stringent state laws. This is an issue of increasing significance. Since the passage of SARA in 1986, EPA has witnessed the evolution of many potential state ARARs,

which are becoming more stringent and more complex. This is one of the issues EPA is reviewing carefully during the reauthorization process.

Risk Assessment

Risk assessment is an important feature of EPA's implementation of the program. The use of risk assessment was not required by Congress, but was developed by EPA to fulfill the requirement to select protective remedies where ARARs that define protective levels are not available.

EPA adopted a site-specific risk assessment approach to determine whether contaminants of concern identified at sites pose a current or potential risk to human health or the environment and to assist in the development of protective cleanup levels.

ADMINISTRATIVE IMPROVEMENTS AND OTHER ACCELERATION INITIATIVES

In 1991 EPA undertook a 30-Day study to determine ways to accelerate cleanups. The study found the investigation and remedy selection process typically takes over three years to complete because each site is treated as a unique problem, requiring the preparation of site-specific risk assessments, cleanup levels, and technical solutions. The study proposed standardization of remedial planning and remedy selection to reduce the time it takes to start cleanup and to improve consistency across regions. More recently, the Administrative Improvements initiative refocused attention on efforts to streamline remedy selection and implementation.

Soil Screening Levels

As part of its Administrative Improvements, EPA is in the process of developing soil screening levels. These levels are chemical concentrations in soil which represent a level of contamination above which there is sufficient concern to warrant further site-specific study. Generally, where contaminant concentrations in soil fall below the screening levels, no further study or action will be warranted. These numbers are not necessarily cleanup levels but will foster quicker identification of contaminants and exposure areas of concern, will increase consistency of remedial response, may simplify or accelerate the baseline risk assessment, and could serve as cleanup goals under specified conditions. The screening levels may provide a foundation for developing standards for soils in the future.

Land Use

Another one of the proposed Administrative Improvements involves addressing land use considerations during remedy selection. Under EPA's current site-specific approach, land use is a very important consideration in determining the cleanup levels to be met, the extent of remediation, and the cost of cleanup. Both current and likely future land uses are considered in the remedy selection process to ensure that the selected remedy will be protective given current and likely future uses of the site.

EPA is considering new policies to address land use considerations in the development and selection of remedies. First, to ensure appropriate and timely discussion with those most affected by land use at sites, EPA is considering issuing guidance that would call for site managers to consult actively with the public and local planning authorities in determining realistic future land use scenarios as early in the process as possible and to determine whether local authorities are able and willing to support any controls to limit future use to nonresidential purposes.

Secondly, the Agency has been criticized for being overly conservative in its selection of Superfund remedies, in part due to the assumption in many cases that the future use of many sites could be residential. EPA recognizes that this is not a likely scenario for all sites. One policy approach being considered is to assume that the future land use will be the same as the current use unless persuasive information from the enhanced dialogue with the local agencies and communities indicates that land use is likely to change. This change in policy could imply, however, that if a remedy is chosen based on the assumption that future land use is industrial, institutional controls may be needed to ensure that land use does not change without additional cleanup or other remedy.

Presumptive Remedies

The Administrative Improvements also includes the development of "presumptive remedies." Presumptive remedies are the preferred cleanup technologies for common categories of sites based on historical patterns of remedy selection, EPA's scientific expertise, and implementation experience. We believe the identification of presumptive remedies will streamline the Superfund program significantly by standardizing the current remedy selection process for certain types of sites. The

program has developed the presumptive remedy initiative as a means of focusing and expediting site characterization and the evaluation of remedial alternatives, allowing us to reach remedy selection decisions earlier. However, EPA will leave some flexibility in the remedy selection process so that decisions can take into account unforeseen or unusual site conditions, such as the discovery of other contaminants, heterogeneous soil types, comments from potentially responsible parties, or state and community concerns.

To date EPA has identified seven categories of candidate presumptive remedy sites. The seven categories of sites for which the Agency is developing presumptive remedies are municipal landfills, wood treater sites, sites with volatile organic compounds in soils, sites contaminated with polychlorinated biphenyls, coal gasification sites, grain storage sites, and contaminated ground water sites.

This presumptive remedy process is consistent with the requirements outlined in the NCP but uses the flexibility in existing regulation and guidance to streamline the remedy selection process. Under this initiative, the remedial investigation and feasibility study will proceed with far greater focus and efficiency as unnecessary steps are eliminated, and other steps are narrowed, to avoid unnecessary complexity.

Dense Nonaqueous Phase Liquids (DNAPLs)

Cleanup of contaminated ground water is one of the most difficult problems facing the Superfund program. Approximately 85% of hazardous waste sites on the NPL have some degree of ground water contamination. Since the mid-19805, EPA's policy for Superfund has been to "return usable ground waters to their beneficial uses, wherever practicable . . ." A recent EPA review indicated a prevalence of contamination of ground water by dense nonaqueous phase liquids (DNAPLs), which are very difficult to remediate. This has led EPA to refine its activities and expectations regarding the practicable extent of ground water remediation for many hazardous waste sites in the Superfund program.

If the presence of DNAPLs is suspected, site investigation and remedial actions generally Should be designed to address two different parts of the contamination problem: 1) the plume of dissolved contaminants, and 2) subsurface sources of DNAPLs. In addition, a phased approach should be used for investigating and cleaning up DNAPL sites, whereby knowledge gained from earlier work is used to improve the effectiveness of later investigations or actions in a step-by-step approach. As part of the phased approach, early actions should be initiated to prevent the further spread of contaminants, including containment of the dissolved plume and control and removal of subsurface DNAPLs to the extent practicable. The long-term objective for the dissolved plume should be to restore as much of this portion of the aquifer as possible to cleanup standards. In contrast, the long-term objective for portions of the aquifer where DNAPLs are present generally should be to minimize further release of contaminants from the DNAPL sources and to reduce the quantity of source material present. This two-pronged strategy is currently being applied at some DNAPL sites and has been successful in restoring portions of contaminated aquifers to required cleanup levels at one Superfund site in Dayton, New Jersey and two state regulated sites in San Jose and Lathrop, California. EPA will outline this approach in guidance to be issued shortly.

Accelerated Cleanup

In addition to these individual initiatives aimed at streamlining specific aspects of the remedy selection process, EPA has undertaken a broad programmatic reform to make the overall Superfund process more efficient and cost-effective. This reform is the Superfund Accelerated Cleanup Model or SACM. SACM will accelerate the Superfund process by better integration of Superfund program components. The SACM approach includes:

- coordinating comprehensive planning by developing one unified list of sites for all Superfund response action (removal and remedial);
- continuing the practice of addressing worst sites first with an emphasis on prompt risk reduction through early actions (removal or remedial);
- integrating site assessment into a continuous process for assessing site-specific conditions and the need for action;
- promoting early public notification and participation; and
- initiating enforcement activities early using- phased approach.

EPA believes SACM represents a very significant means by which Superfund cleanups can be made more timely and efficient under current law and regulation.

CONCLUSIONS

In summary, I believe EPA is making significant strides in improving our ability to reach good remedy selection decisions more quickly. Mr. Chairman, thank you for the opportunity to address the Subcommittee on these issues. I will be happy to answer any questions you may have.

STATEMENT OF PETER F. GUERRERO, ASSOCIATE DIRECTOR, ENVIRONMENTAL PROTECTION ISSUES, RESOURCES, COMMUNITY, AND ECONOMIC DEVELOPMENT DIVISION, GENERAL ACCOUNTING OFFICE

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE: We are pleased to be here today to discuss the Environmental Protection Agency's (EPA) accomplishments to date in cleaning up hazardous waste sites in the Superfund program's first decade, some of the challenges that EPA faces in cleaning up the hundreds of remaining sites, and possible approaches to site cleanup. With the Superfund law scheduled for reauthorization in 1994, questions have arisen about Superfund's progress since the program's inception in 1980. Under Superfund, EPA has placed nearly 1,300 sites with the most serious problems on the National Priorities List (NPL) and expects this list to grow annually by about 100 sites. As of the end of fiscal year 1992, EPA had completed cleanup work and removed from the NPL 40 sites that it believes have been cleaned to a level protective of human health and the environment; conducted 3,244 emergency removals at NPL and non-NPL sites; completed construction of cleanup remedies at 109 NPL sites; and begun conducting cleanup work at an additional 374 NPL sites. Following criticisms of apparently slow progress in cleaning up sites, EPA set new goals in 1991 for significantly increasing the number of sites where substantial cleanup work would be completed.

Our testimony today is based on our review of completed Superfund cleanups for this Subcommittee and the resulting report to be released at today's hearing. [1] Our report summarizes the type and extent of cleanup work at Superfund sites either deleted from the NPL or where construction of cleanup remedies is complete. Our report also discusses the challenges EPA will face in managing and monitoring sites where contamination has been left in place. For this hearing, we will also discuss some possible approaches for determining protectiveness and setting cleanup standards at Superfund sites.

In summary, as of September 30, 1992, significant amounts of hazardous wastes had been removed or controlled at the 149 sites EPA deleted from the NPL or reported as construction-complete—that is, where construction of the cleanup remedy was finished. [2] We found that EPA used remedial and emergency removal actions to address immediate contamination risks and control long-term threats to human health and the environment from surface and groundwater contamination. However, in reporting its cleanup accomplishments, EPA has not differentiated between sites that already protect human health and the environment and those that require ongoing activities to reach their cleanup objectives. Of the 149 sites, 29 may require years of groundwater treatment to achieve their cleanup objectives. Furthermore, EPA reported as construction-complete or deleted 23 sites at which no removal or remedial actions were necessary. As a result, EPA may have overstated its cleanup accomplishments.

Additionally, significant federal, state, and responsible party resources will still be needed to address contamination problems at remaining Superfund sites and to achieve and sustain cleanup standards at construction-complete and deleted sites. Sites that have not yet reached the construction-complete stage will likely be more costly to clean up because they are more complex and because waste treatment rather than containment remedies will be used more frequently, and treatment remedies are more expensive. At almost half of the construction-complete and deleted sites, EPA, states, and responsible parties are also incurring significant oversight, operation, and maintenance costs to ensure that cleanup remedies remain effective. The ability of states and responsible parties to maintain and operate these sites will determine whether these remedies continue to protect public health and the environment. A 1991 EPA study shows that the states will incur $1 billion in operation and maintenance costs over the next 7 years, and officials in five states

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[1] *Superfund: Cleanups Nearing Completion Indicate Future Challenges* (GAO/RCED-93-188, Sept. 1, 1993).

[2] Subsequent to the completion of our audit work, EPA reported on August 19, 1993, that an additional 28 sites have been reported as construction-complete or deleted from the NPL.

question whether they will be able to meet these obligations. [3] States and EPA will need to plan for these increasing costs.

Over the next decades, EPA will face enormous challenges, resource demands, and debate about the best approach to cleaning up the hundreds of remaining sites. One central issue is how EPA defines protection of human health and the environment at sites and how it sets site cleanup standards. This issue arises in part because EPA wants Superfund to be both a national program that is scientifically valid, consistent, and defensible and also a program that is responsive to the needs and realities of site-specific conditions. As requested, we will discuss briefly today some possible approaches for responding to this dilemma.

Before we begin a more detailed discussion of our findings, let us provide you with some background information on how Superfund sites move through EPA's cleanup process.

BACKGROUND

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA or Superfund) allows EPA to evaluate hazardous waste sites and place the worst on the NPL. Superfund also established a $1.6 billion fund for cleaning up these priority sites and required that parties responsible for these sites help conduct or pay for cleanup. In 1986, the Superfund Amendments and Reauthorization Act (SARA) set new requirements and ambitious targets for initiating cleanups and added $8.5 billion to the trust fund. In 1990, the Congress reauthorized CERCLA through 1994 and added $5.1 billion to the trust fund, bringing its total authorizations to $15.2 billion, without making any substantive changes to the program. States are responsible for cleaning up hazardous sites that are not on the NPL and helping finance some cleanup costs at sites on the NPL. However, CERCLA did not define cleanup levels or preferred remedies when it was enacted in 1980.

Once a site is included on the NPL, EPA conducts or oversees a study to identify wastes and evaluate possible remedies. Next, EPA selects a cleanup remedy appropriate for the site's waste and develops a plan outlining cleanup activities and goals for reducing contaminants. Remedies for different waste problems may include treating or destroying contaminated waste material, disposing of contaminated waste at an off-site landfill, treating contaminated groundwater, or containing waste at the site by covering it with an impermeable cap. In reauthorizing the Superfund program in 1986, the Congress encouraged EPA to select remedies that treat waste to reduce its toxicity, mobility, or volume whenever practicable.

Once the remedy has been selected, EPA or the responsible parties construct it. Under Superfund, EPA oversees cleanups and can delete sites from the NPL when all work is complete, cleanup standards are reached. If contamination remains after deletion, EPA must conduct at least one review 5 years after the cleanup began to ensure that the remedy still protects human health and the environment. States and responsible parties operate, maintain, and monitor the completed site. EPA may use its emergency removal program at any time during the cleanup process if it determines that immediate action is needed to protect human health and the environment.

In response to criticism that the cleanup process proceeds too slowly, in 1991 EPA began to emphasize completing cleanup at NPL sites. EPA created a new "construction-complete" category to more accurately report those sites where all cleanup construction is completed. Sites in this category cannot yet be deleted from the NPL because they may require long-term efforts, like groundwater treatment, to reduce contaminants to a level EPA has determined will protect human health and the environment. Or they may need to meet other requirements, such as state concurrence. EPA set a goal of 130 construction-complete and deleted sites by the end of fiscal year 1992. By September 30, 1992, EPA had deleted 40 sites from the NPL and completed construction at 109 sites, for a total of 149 sites, and the information we are reporting today is based on those 149 sites. As of August 19, 1993, EPA reported 126 construction complete and 51 deleted sites.

We would like now to describe EPA's progress in completing remedy construction at sites and deleting them from the NPL.

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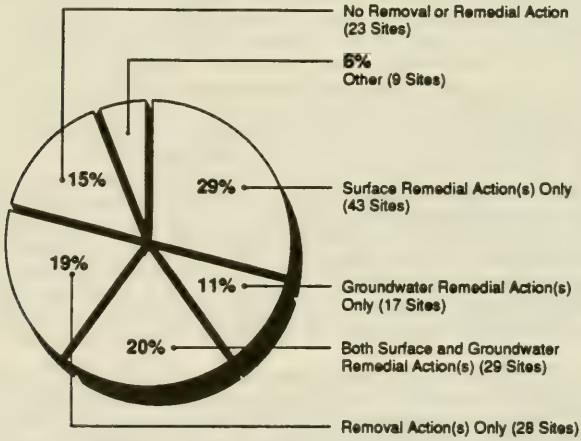
[3] *Record of Decision Operation and Maintenance Cost Analysis,* U.S. Environmental Protection Agency (Washington, D.C.: June 1991). These figures were based on estimates of future cleanup costs that are subject to variability.

SIGNIFICANT AMOUNTS OF WASTE HAVE BEEN REMOVED OR CONTROLLED

At 117 of the 149 construction-complete and deleted sites EPA had reported as of September 30, 1992, EPA and responsible parties used either remedial actions or removal actions to reduce or control surface and groundwater contamination. To address surface contamination—including contaminated site structures, hazardous waste containers buried below or lying on the surface, and soil contaminated with hazardous chemicals—EPA used off-site disposal, on-site containment, and on-site treatment technologies. Treatments used included solidifying the waste to immobilize it and applying a vacuum system to remove contaminated waste from the soil. EPA generally decided to address groundwater contamination by extracting the contaminated water and then treating it, or through measures to control its movement, such as installing an underground barrier. In addition, EPA's removal program for immediate site action was instrumental in cleaning up wastes. In all, EPA took 125 separate removal actions at over half of the 149 sites, and the removals adequately addressed risks and cleaned 28 of these sites.

At 23 of the 149 sites, EPA took no removal or remedial action because further studies showed that these sites posed no threat to human health and the environment. For example, the Morris Arsenic Dump site in Morris, Minnesota, was reported as a dumping ground for arsenic-bearing pesticides in the 1940s and listed on the NPL in 1983 because some groundwater samples showed elevated arsenic levels. After later studies found no arsenic above normal levels in soil or groundwater samples, EPA deleted the site from the NPL in 1986.

Figure 1: Types of Remedies Used at Construction-Complete and Deleted Sites



Note: Based on 149 construction-complete or deleted sites. "Other" includes efforts to reduce waste exposure without physical construction. Examples include relocating residents or controlling land use.

Source: GAO's analysis of EPA's data.

Although EPA has significantly increased the number of construction-complete and deleted sites, it could do a better job of reporting the extent of cleanup work performed. In reporting cleanup completions, EPA has not differentiated between sites that already protect human health and the environment and those that require ongoing treatment to reach their cleanup objectives. We believe that by reporting all construction-complete and deleted sites as a single number, EPA is not making important distinctions about the cleanup accomplishments achieved. For example, 23 of the 149 sites needed no cleanup actions of any kind, but were still included on a recent completion list.

Since the types of cleanups and measures of protection vary from site to site, EPA's method for classifying and reporting site cleanup status should avoid the implication that all sites are equally protective of human health and the environment. The Congress and the public would be better informed of the true status of these sites if the classification system fully reflected the extent to which cleanup objectives have been achieved. To improve the information that EPA provides to the Congress and the public, our report recommends that the EPA Administrator modify the classification of construction-complete and deleted sites. The classification should identify sites according to whether they have achieved the objectives of protecting human health and the environment and have been deleted or are awaiting deletion, required no removal or remedial action, or will require long-term effort to achieve their cleanup objectives.

SIGNIFICANT RESOURCES WILL BE REQUIRED FOR CLEANUP ACTIVITIES

Hazardous waste sites still in the Superfund pipeline will likely be more difficult and costly to clean up than the 149 sites in our review because remaining sites have relatively more complex contamination problems and EPA has selected treatment more frequently to clean surface waste since 1986. To date, EPA has incurred costs of $374 million to clean up contamination problems at construction-complete and deleted sites. EPA incurred a median cost of $2.1 million at those sites among the 149 where it funded all the site work. EPA estimates that cleanup at EPA-funded sites currently listed on the NPL will cost an average of about $26 million.

EPA, states, and responsible parties will be required to operate, maintain, and monitor sites where untreated waste remains. About 40 percent of construction-complete and deleted sites used containment or groundwater treatment technologies that require continuing vigilance. Groundwater treatments at these and other sites will take an indefinite period, during which ongoing operations and maintenance will be required to ensure continued protectiveness. Furthermore, a recent EPA policy statement recognized the technological barriers to cleaning up sites with groundwater contamination, particularly those with nonaqueous phase liquid contamination or certain geological features. [4] Because of these technological limitations, some of the groundwater treatment systems in place may never achieve the remediation goals for the site.

These ongoing cleanups have significant implications for the resources EPA will need for oversight as well. EPA plays a crucial role in ensuring the continued protectiveness of cleanup remedies through evaluation of site monitoring data, periodic inspections, and 5-year reviews. Approximately 35 percent of the 149 sites we reviewed include institutional controls, such as fences or restrictions on land or water use, to control waste left on sites. Such institutional controls imply an indefinite enforcement period to maintain the integrity of a cap or protect the public from contact with contaminated soils. Given the long-term nature of these remedies, EPA is expected to include financial assurance provisions in its legal agreements with responsible parties to help ensure that cleanup protectiveness will not be jeopardized if they become financially insolvent. At the Mowbray Engineering site in Alabama, the draft 5-year review showed that responsible parties had not collected the required groundwater samples, maintained the site fence, or inspected and maintained the cap over the solidified contaminated material, potentially compromising the remedy in place. Since up to 48 percent of the construction-complete or deleted sites will require 5-year reviews, EPA's 5-year review work load is considerable and growing. Through the year 2000, according to EPA officials, more than 700 5-year reviews will he scheduled, at a cost of about $35 million. Furthermore, the protectiveness of remedies at sites with waste remaining on-site could be jeopardized by

[4] Nonaqueous phase liquids are generally organic compounds that do not dissolve in water and are difficult to remove with current technologies. If they cannot be removed, their presence may continue to contaminate groundwater.

other events: 59 sites on the NPL are in flood areas that may potentially be affected by the recent floods in the Midwest.

Some states are concerned about their ability to monitor, operate, and maintain completed sites for which they are responsible. At the Wade site in Chester, Pennsylvania, the state did not have the resources and staff to take required yearly samples from the site wells in accordance with the monitoring plan. This problem may become more severe and widespread as states are called upon to operate and maintain an increasing number of Superfund sites. EPA has conducted several studies to assess the current and future capacities of the states to finance their hazardous waste programs.

The continued efficacy of the program depends on the extent to which EPA, the states, and the responsible parties have the necessary resources to sustain the continuing technical and longterm financial challenges associated with these hazardous waste site cleanups. Given these resource demands, a forecasted decrease in the Superfund operations budget, and the increased complexity of ongoing cleanups, better estimates of EPA's future costs to monitor and inspect sites and the states' future costs to operate and maintain them could aid both EPA and the states. These estimates could be used in determining resource needs and in planning and coordinating actions to meet those needs and commitments in the long term. To plan for resource requirements at construction complete and deleted sites, our report recommends that the EPA Administrator conduct additional studies to estimate EPA's longterm costs to monitor and inspect completed sites and the states' costs to operate and maintain them.

FOUR APPROACHES HAVE BEEN PROPOSED FOR DETERMINING PROTECTIVENESS AND SETTING CLEANUP STANDARDS

Over the next decades, EPA will face enormous challenges, resource demands, and questions about the best approach to cleaning up the hundreds of remaining sites. Today, we would like to discuss four possible approaches for determining protectiveness and setting cleanup standards. These approaches, which have been discussed since before Superfund's first reauthorization in 1986, propose to resolve cleanup issues by approaches that are either more standardized nationwide or more specific to individual sites. EPA's own approach reflects a dichotomy between national standardization and more site-specific approaches. Possible cleanup approaches include more standardized ones, such as setting uniform national standards for acceptable residual levels of contaminants at sites or selecting the best available technology. Such standardized approaches have been criticized for not recognizing the impact of site-specific conditions, such as soil type and hydrogeology, on protectiveness. More site-specific cleanup approaches, such as risk assessment, have been criticized for resulting in inconsistent cleanups and levels of protectiveness. In addition to briefly discussing four possible approaches to determining protectiveness and setting cleanup standards, we would like to mention several new approaches to cleanup that EPA is currently developing and how they relate to the other four approaches. Before discussing the four approaches, we would like to provide a sense of the broader context in which these and other cleanup approaches are being considered.

Superfund Cleanup Approaches

Although many involved in the Superfund process agree on the importance of protecting human health and the environment, no consensus exists as to how much site cleanup is appropriate. As was the case when we discussed this issue in 1985 in preparation for Superfund's first reauthorization, [5] opinions range from the belief that all sites should be completely cleaned to pristine conditions to the belief that cleanup decisions should be made on a site-by-site basis. Since EPA projects that an average Superfund cleanup will cost about $26 million, cost has also emerged as a factor that may affect remedy selection regardless of whether the money comes from EPA program resources, responsible parties, or states that must fund longterm operations and maintenance in some cases. EPA also still confronts a significant problem that has existed since the program's inception—how to determine protectiveness and set cleanup standards in the face of insufficient information on exposures to and health effects of many contaminants.

The absence of cleanup standards in Superfund's original authorizing legislation left the determination of protectiveness open to controversy and confusion that have

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[5] *Cleaning Up Hazardous Wastes: An Overview of Superfund Reauthorization Issues* (GAO/RCED-85-69, Mar. 29, 1985).

not been entirely resolved by EPA's current approach to setting cleanup standards. While other federal environmental legislation during the 1970s had sought to establish national standards for particular media (air, water, etc.), hazardous waste sites present EPA with complex cleanup problems because of the variety of chemicals found in different media. EPA chose not to develop separate cleanup standards for sites on the NPL. Instead, EPA's approach to protectiveness uses a combination of standards from other federal and sometimes state environmental programs and risk assessment to set cleanup standards on a site-by-site basis. In 1985 EPA began using standards for contaminants from other environmental laws when these standards are considered "applicable" or "relevant and appropriate" requirements (ARAR). The ARARs on which EPA relies for cleanup standards cover only some of the hundreds of contaminants found at Superfund sites, and no federal ARARs exist for the cleanup of soil, where much contamination is found. In the absence of ARARs for all contaminants and possible routes of exposure, EPA uses risk assessments to determine the specific risks at a site and to set appropriate cleanup levels. The *Risks Assessment Guidance for Superfund* (RAGS) describes EPA's current process for setting cleanup levels on the basis of information on health effects and risk assessments. Use of risk assessment has contributed to variability in cleanup goals and remedies.

This variability in cleanup goals and remedies selected for Superfund sites has led to charges of inconsistent protection of human health and the environment. Our previous work on Superfund has shown that EPA did not always specify cleanup standards in its site cleanup plans. When Superfund cleanup plans did establish numerical cleanup standards, these varied considerably. [6] Several factors have contributed to the variation, including a lack of federal standards for soil cleanup, the use of different assumptions to direct cleanup of the same contaminant, and compliance with different state environmental laws and standards. Variation also results from assumptions about the potential future use of the site for residential or industrial purposes, which can be a key and controversial factor in determining site risk and cleanup levels.

In a decade of Superfund cleanups at construction-complete and deleted sites and those where cleanup is still in progress, EPA has dealt with the realities and difficulties presented by a variety of sites and should now be in a better position to develop workable approaches to cleanup. When the Superfund program was authorized in 1980, many hoped it would be a short-term effort that would restore sites to their original condition. EPA's experience has shown that this is not technologically feasible at many Superfund sites. Additionally, there are several other issues to consider. First, defining the original condition of the land before the release of contaminants is often difficult. Second, returning a site to its original condition may not make sense if it is surrounded by other seriously polluted industrial facilities. Finally, achieving such a goal could prove extremely costly.

Uniform National Cleanup Standards

One approach to resolving the issue of "how clean is clean" is for EPA to set uniform national standards for acceptable residual levels of contaminants at Superfund sites. Such standards could provide differentiated cleanup levels for different levels of land use, such as residential or industrial. Using standards could reduce the time taken to study individual sites and increase consistency. Setting standards could also stimulate the development of a scientific base to quantify the risks posed by hazardous waste sites. The standards could also potentially be useful for many non-Superfund sites under the jurisdiction of other federal or state environmental programs. However, because of the lack of scientific data and criteria for setting standards for the hundreds of contaminants at Superfund sites, developing such standards would require enormous resources and may not be feasible because of site-specific differences in soil characteristics, hydrogeology, and other factors. Furthermore, different site conditions, land uses, and technological feasibilities makes the application of a single minimum numerical standard difficult and could lead to varying levels of risk reduction, costs, and cleanup.

EPA is developing a cleanup approach that is somewhat similar to the idea of national cleanup standards, but which would be a tool for screening sites to determine whether they need cleanup instead of for setting final cleanup objectives for sites. EPA's approach is to develop soil screening levels for a variety of chemicals. It believes these levels will be an important tool for identifying contaminant levels below which there is no concern and above which further site-specific evaluation would be

[6] *Superfund: Problems With the Completeness and Consistency of Site Cleanup Plans* (GAO/RCED-92-138, May 18, 1992).

warranted. EPA believes that setting soil screening levels will accelerate investigation of soil contamination at sites, streamline risk assessment, and improve consistency in soil cleanups. EPA plans to issue guidance on soil screening levels for about 30 chemicals during fiscal year 1993 and to pilot-test the approach in EPA's 10 regions. The agency plans to establish soil screening levels for another 60 chemicals in the next fiscal year. According to EPA officials, soil screening levels are not designed to evaluate ecological risks or risks associated with industrial land-use assumptions.

Best Available Technology

Another standardized approach is to clean up each site by choosing the best available technology to address the site's contamination, as EPA has done for other environmental programs. This approach would result in more consistent remedy selection and recognize that the limits of technology control what site cleanup objectives are established. However, the multiple contaminants and means of exposure to them at most Superfund sites make this approach almost impossible to apply. Furthermore, procuring the best available technology could be costly, and EPA lacks suitable criteria for selecting technologies, especially since the long-term effectiveness of many cleanup remedies remains unproven. Technology-based standards would also favor established technologies and inhibit the development of innovative technologies that could, as we have testified, [7] help foster the development of more cost-effective ways to treat waste. Finally, some highly effective technologies, for example incineration, may not be acceptable to the public and to affected communities.

EPA is employing some aspects of the best-available-technology approach in its plans to develop and promote standardized or suggested remedies for certain common site types. The objective of these remedies, known as presumptive remedies, is to draw on the program's past experience in both investigation and remedy selection to streamline site investigations and the selection of cleanup actions at certain categories of sites. EPA expects this process to improve consistency in remedy selection and reduce the time it takes and cost to clean up similar types of sites. To develop the presumptive remedies, EPA evaluated technologies that have been consistently selected at past sites and reviewed available performance data on these technologies. EPA has drafted guidance identifying presumptive remedies for municipal landfills and volatile organic chemicals in soils and plans to issue this guidance at the end of this fiscal year. It also plans to expand the use of presumptive remedies to other site categories in the next fiscal year. EPA also plans to conduct demonstration projects on these various presumptive remedies during fiscal years 1993 and 1994. This approach draws on aspects of the best-available technology option described above but would allow the flexibility to try other remedies or innovative technologies if they were appropriate for a site.

Site-Specific Risk Assessments

One site-specific approach would be to rely on risk assessment as the primary process for estimating site risks and setting site specific cleanup objectives. This approach, while close to EPA's current approach, would expand the current use of risk assessments to provide a systematic framework for estimating site-specific risks and ensuring that the resources expended maximize risk reduction. This approach would not resolve differences of opinion about the interpretation of scientific data needed for risk assessments, the models and assumptions that should be used, or the uncertainties involved in the process that have contributed to differing views as to whether EPA's risk assessments are too conservative or not conservative enough. Furthermore, expanded use of risk assessment could leave EPA open to the perception that its remedies are inconsistent and not equally protective across sites and EPA regions.

Treatment of Immediate Risks and Delay of Full Cleanup

Another approach involves treating the most immediate and significant threats at a site on a site-by-site basis and delaying additional treatment until key standards and technologies are developed. Under this approach, EPA could significantly reduce the most immediate hazards at many sites and direct resources toward research on standards and technologies. While this approach would mitigate immedi-

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[7] Our testimonies, *Superfund: EPA Needs to Better Focus Cleanup Technology Development* (GAO/T-RCED-92-92, Sept. 15, 1992, and GAO/T-RCED-93-34, Apr. 28, 1993), were given before the Subcommittee on investigations and Oversight, House Committee on Public Works and Transportation, and the Subcommittee on Investigations and Oversight, Committee on Science, Space, and Technology, respectively.

ate risks, it would allow other site problems to remain for extended periods of time in a program already under criticism for the slow pace of cleanup. Nevertheless, this approach would result in containment of waste and control of risks for the extended time needed to research and determine appropriate cleanup standards, and to develop and test appropriate technologies.

EPA's plan to use early cleanup actions to streamline and accelerate cleanups is similar to this approach. in response to recommendations made in EPA's June 1989 review of Superfund management, [8] EPA has developed the Superfund Accelerated Cleanup Model (SACM). EPA is currently developing guidance for SACM and pilot-testing aspects of this approach. SACM would feature early cleanup actions to remove quickly immediate threats to the health and safety of the local population. These cleanups would generally take less than 3 years, at most 5 years, to complete and include activities such as drum removal, building fencing, providing alternate drinking water supply, and surface cleanup associated with remedial actions. SACM calls for eliminating the distinction between removal and remedial actions and consolidating site assessments now performed by various parties at various points in the cleanup process. If the site assessment establishes that a site still needs long-term remediation, the site would be placed on a long-term remediation list and cleaned up over many years. EPA believes that this approach would let the public know that long-term actions will require years to complete but that the contamination poses no immediate threat. Thus, time would be allowed for a more reasoned evaluation of benefits and costs of various cleanup options.

CONCLUSIONS

In conclusion, Mr. Chairman, in the face of uncertainties about how best to determine protectiveness and about the ultimate efficacy of its cleanup remedies, EPA is continuing to clean up Superfund sites. In cleaning up sites since Superfund's inception a decade ago, EPA has gained important experience and been confronted by the realities of technology limitations, the time needed for cleanup, the high cost of many cleanups, and the absence of simple solutions for resolving the issues of protectiveness and setting cleanup standards. Each of the four approaches discussed today has been available since before Superfund's first reauthorization. Shortcomings of each approach, questions about which approach has the greatest potential for achieving a sufficient level of protectiveness, and the complexity of many sites do not provide EPA with clear-cut solutions for conducting and expediting more consistent Superfund cleanups. EPA has developed proposals for soil screening levels, presumptive remedies, and accelerated cleanups that incorporate some aspects of the four approaches discussed but also retain the flexibility needed to tailor cleanup standards and remedies to site-specific conditions. It is, however, still too early for us to judge the merits of EPA's proposals.

Mr. Chairman, this concludes our prepared statement. We will be glad to respond to any questions that you or members of the Subcommittee have.

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[8] *A Management Review of the Superfund Program* (U.S. EPA, June 1989).

GAO

United States
General Accounting Office
Washington, D.C. 20548

Resources, Community, and
Economic Development Division

October 14, 1993

The Honorable Frank R. Lautenberg
Chairman, Subcommittee on Superfund,
Recycling, and Solid Waste Management
Committee on Environment and Public Works
United States Senate

Dear Mr. Chairman:

As requested, I am providing written responses for the additional questions that you asked following our testimony on the Superfund cleanup process on September 9, 1993. The enclosed responses are for inclusion in the official hearing record.

If you or any of your staff have any questions, I may be reached on (202) 512-6522.

Sincerely yours,

Peter F. Guerrero
Associate Director
Environmental Protection Issues

Responses to Additional Questions for Mr. Guerrero

1. How would national cleanup standards work at sites that have many wastes mixed together?

Research on toxicity of wastes has focused on individual chemicals rather than the mixtures found at many hazardous waste sites. Therefore, it is not known whether mixtures potentially affect human health in different ways from the individual chemicals found in the mixtures. As a result, EPA has not set any screening levels or standards for specific mixtures. Currently, EPA assumes that risks from individual chemicals are additive when determining whether to clean up a site with a mixture of contaminants, and when setting risk-based standards.

2. How long do you think it would take for EPA to develop these standards?

If EPA were to set standards for hazardous wastes in all media, including soil, groundwater, and surface water, the process would take years. Extensive study would be necessary, including risk assessments for all contaminants in all media. For contaminants that already have well-documented toxicity data, calculating a "safe" level is relatively straightforward. However, other contaminants would require additional animal studies to generate more precise toxicity information. The regulatory process of public comment and review would also add time to promulgating the standards.

In addition, standards set for the Superfund program would have to be coordinated with the other environmental programs. For example, the Safe Drinking Water Act establishes maximum concentration levels (MCLs) for various contaminants in drinking water. If the Superfund program were to develop standards for groundwater, EPA would have to determine when each set of standards would apply and explain the differences between them. The Superfund program has already encountered delays in issuing guidance on soil screening levels for common contaminants because of potential conflicts with the Resource Conservation and Recovery Act (RCRA) program.

3. Is it possible to determine the presence of all types of hazardous substances at a site? If not, could you explain how uniform national cleanup standards developed for only some of the wastes at a site will do much good?

Under EPA's Contract Lab program, laboratories routinely screen hazardous waste site samples for about 150

contaminants. Thus, it is possible that at some sites all contaminants will not be detected. This is particularly true for those sites, such as landfills or illegal dumping areas, without good records of site activities to indicate the types of contamination that might be expected. This limitation of the Remedial Investigation/ Feasibility Study (RI/FS) process exists whether cleanup standards are set using the current site-specific risk assessment process or by using national standards.

Setting standards for a limited number of contaminants may result in remedies that clean up even those chemicals not detected under EPA's current practices. Contaminants can be classified into categories, such as heavy metals, volatile organic compounds, or polycyclic aromatic hydrocarbons (PAHs), by the similarity of their properties. Treatment remedies, such as incineration of soil or air stripping of groundwater, are often effective against entire classes of contaminants.

4. If we eliminate the law's preference for "permanent" remedies, what incentive will there be to develop a more effective permanent treatment remedy at the site? Why will PRPs invest in research to develop better cleanup technologies?

Removing the preference for permanent remedies definitely removes an important incentive to develop waste treatment technologies. However, other incentives exist for research on permanent remedies. Permanent remedies allow PRPs to avoid potentially costly long-term operations and maintenance activities necessary at sites with containment remedies. They also represent an end to the PRPs' liability for the site, an attractive alternative in some cases. Thus, some incentives are likely to remain for responsible parties to develop more cost-effective remedies for both treatment and containment of hazardous waste. Permanent remedies can also be developed in other ways. For example, several federal facilities are planning joint projects with EPA and the private sector to evaluate innovative technologies.

Testimony of Alan C. Williams [1], Assistant Attorney General, State of Minnesota

Mr. Chairman and Members of the Subcommittee: Thank you for the opportunity to testify to the Subcommittee on the State perspective on remedy selection and cleanup goals and standards under CERCLA First, I would like to convey greetings to the members of the Subcommittee from Attorney General Hubert H. Humphrey, III. As Minnesota's Attorney General and as current president of the National Association of Attorneys General, Attorney General Humphrey looks forward to working with you and other members of Congress in the coming year on the reauthorization of the federal Superfund law, as well as other environmental issues that are of great importance to the States.

The perspective that I want to share with the Subcommittee today represents the thinking of both the staff of the Minnesota Superfund program and the Minnesota Attorney General's Office. It is based on ten years of experience in implementing one of the leading state cleanup programs in the country. The concepts discussed here also draw on the deliberations of the SARA Evaluation Task Force of the Association of State and Territorial Solid Waste Management Officials (ASTSWMO). An outline of this approach was presented in a concept paper presented to the Superfund Evaluation Committee of NACEPT in August, 1993, by the committee member from Minnesota. [2] Today's testimony elaborates somewhat further on how CERCLA and the federal Superfund program should be changed in order to implement the approach suggested in the concept paper. While I will refer to this approach to the Superfund remedy selection process as the "Minnesota approach", it reflects the ideas of the states represented on the ASTSWMO SARA Evaluation Task Force and of a number of other States that Minnesota has worked with on this issue.

Minnesota has extensive experience in selecting and implementing (or overseeing implementation of) Superfund remedies, both for sites on the National Priority List (NPL) and the state's Permanent List of Priorities (PLP). Minnesota is the lead agency for most NPL sites in the state, including both enforcement and fund-financed sites. It has implemented remedy selection under EPA's rules, and under its own state criteria and selection process. There are currently 189 sites on the Minnesota PLP; 42 of these are also on the NPL Remedial action has been commenced at 70 of these sites, with remedies for one or more operable units completed at 39 sites. [3]

ISSUES TO BE ADDRESSED

The Subcommittee, through its staff, has requested Minnesota to address a number of topics related to remedy selection under CERCLA, including permanent remedies, use of AAARs as cleanup standards, prioritization of sites for cleanup, mechanics of the cleanup process, and state suggestions for a different remedy selection approach. The Subcommittee has also asked that we discuss the changes needed in the Superfund program to improve remedy selection, and whether those changes should be made by statutory amendment or administrative action.

We believe we can address these issues best by laying out the overall approach to remedy selection supported by Minnesota, which takes into account the policy goals id specific standards for measuring effective Superfund cleanups as well as the process by which the remedy is selected. The issues that the Subcommittee seeks to address are interconnected; the resolution of one set of issues is linked to how other issues are resolved. Thus, we think it is useful to look at these issues in the context of an overall approach to Superfund remedies.

We believe that Congress needs to speak clearly and forcefully in the Superfund reauthorization legislation to set clear goals for Superfund cleanups in the future

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[1] Legal Counsel, Minnesota State Senate Committee on Agriculture and Natural Resources, 1980-83; drafted legislation enacted in 1983 as the Minnesota Environmental Response and Liability Act—the Minnesota Superfund law. Currently Assistant Attorney General representing Minnesota Pollution Control Agency as lead attorney for state Superfund program. Drafted state legislation enacted in 1992 to encourage re-use of contaminated property through voluntary cleanups tied to liability protection for new purchasers, developers and lenders. One of lead counsel in lawsuit by nine states challenging the 1990 revision of EPA's Superfund rules (NCP lawsuit). Represent National Association of Attorneys General on EPA/State Superfund Policy Forum, national committee including state environmental commissioners from several states and management of EPA's Superfund program.

[2] The concept paper is entitled "How Clean is Clean/Remedy Selection" and was presented by Lee Paddock, Minnesota Assistant Attorney General to the NACEPT Superfund Committee on July 20, 1993. A copy of that paper is attached to this testimony.

[3] Minnesota Pollution Control Agency, Superfund Site Status Report, February 18, 1993.

and to establish the decision-making framework that EPA will implement to achieve those goals. While the current statute articulates a number of factors and preferences for remedy selection, and codifies EPA's use of applicable and relevant and appropriate requirements as cleanup standards, it does not give clear enough direction to EPA about the priorities among national cleanup goals nor does it require a single, uniform standard for acceptable risk for remediated sites. Certainly some flexibility to meet unique site circumstances is important; but, clear overall goals and objectives are necessary to assure a reasonable degree of remedy consistency as well as accountability for the way that remedial choices are made by the decision-makers.

In our view, administrative action by EPA, based upon current statutory authority and direction, will not be sufficient to resolve these issues. EPA itself seems to have recognized this when it explained in a recent report why it had not adopted any administrative initiatives to clarify Superfund cleanup goals. This is how EPA expressed the problem:

> Currently, Superfund cleanup goals are identified site-specifically on a continuum from exposure prevention to risk reduction to beneficial use to environmental restoration. The range of options available at an individual site can lead to inconsistency and add time to the decision-making process. EPA believes that we need to set clear objectives for Superfund cleanups by first defining the overall goals of the program, and then, specifying "how clean is clean"; i.e., targeting a point on the above continuum.

However, we have concluded that this issue is too complex to adequately address through an administrative solution. [4]

Minnesota agrees wholeheartedly with this statement by EPA. We hope that the suggested approach to remedy selection that will be described in this testimony will contribute to constructive thinking and debate on these issues as this Subcommittee prepares for reauthorization of the federal Superfund law.

AN APPROACH TO SUPERFUND REMEDY SELECTION AND CLEANUP STANDARDS

The overall goal of Superfund should be to achieve fully protective and final (permanent) cleanups at sites where uncontrolled releases of hazardous substances threaten human health and the environment. The Key requirements needed to meet this goal are a clear definition of "permanence" and a uniform, national risk level that all cleanups will be measured against. Based on the uniform risk level, we must develop objective, numerical cleanup standards or models for setting such standards to replace more subjective "relevant and appropriate" standards and risk assessment studies. We must have a more clearly defined decision-making process that places a clear priority on fully protective, permanent cleanups and simplifies the evaluation of remedy alternatives. And we must have a process for selecting the "next best" remedy when a full and final cleanup cannot be selected, while assuring the public that further reduction of risk will be achieved in the future when technologies are available to do so.

HIGHLIGHTS OF MINNESOTA'S PROPOSED APPROACH AND COMPARISON TO REMEDY SELECTION UNDER CURRENT LAW

The following is a discussion of the main points of the approach presented by Minnesota to the Superfund Committee of NACEPT in July, 1993, and a comparison of this approach to remedy selection under the federal Superfund program based on current law, rules and administrative practice.

1. *Uniform National Risk level for Superfund Cleanups*

Congress should establish a uniform, national risk level that sets the target for all cleanups under CERCLA. The uniform risk level will establish the limit of the degree of risk to human health that is acceptable at a site upon completion of a Superfund remedy. Achieving the target risk level should be the measure of a "fully protective" remedy under CERCLA. Currently, CERCLA does not set any uniform risk level for cleanups. EPA rules allow selection of remedies that allow a cleaned up site to fall within a wide range of risk—from one in 10,000 to one in a million additional cancers per lifetime exposure. Under EPA's approach remedies that achieve a level of risk anywhere within this range are adequately protective. The use of a risk range contributes to uncertainty and inconsistency in setting cleanup

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[4] 4Executive Summary, "Superfund Administrative Improvements," EPA, dated June 23,1993, at 12.

standards and selecting remedies. It raises legitimate doubts about whether all Superfund remedies that are declared protective by EPA are fully or equally protective. It is our understanding that the state cleanup program in the State of New Jersey has already established a uniform risk level of one excess cancer in 1,000,000 exposures. We believe this would be a reasonable target level for the national cleanup program although the exact level is a policy matter for Congress and should take into account risk levels set for other environmental programs.

2. *Definition of "Permanent" Remedy*

The second key element of the approach to remedy selection recommended by Minnesota is a statutory definition of remedy "permanence." One of the overall national goals for Superfund cleanups should be finality of the cleanup. Remedies should not have to be revisited years after completion to address residual contamination and associated health risks, nor should the long-term protection of human health, which is supposed to be provided by a Superfund remedy, have to rely on enforcement of land use restrictions to prevent exposure to residual contamination.

Thus, the twin goals for all Superfund sites should be a cleanup that is fully protective of human health and is permanent. To make the permanence goal meaningful, "permanence" must be defined and given appropriate priority in the remedy selection process. Minnesota defines a remedy as "permanent" if it allows unrestricted use of the cleaned up site for residential purposes and minimizes transfer of contaminants to other locations and to other environmental media.

The key concepts underlying this definition are the return of a Superfund site to uses that benefit society, and consideration of overall reduction of risk to human health and the environment from a Superfund cleanup, not just risk reduction at the site in question There can be legitimate debate about what level of beneficial use should be the goal of a permanent remedy. Some participants in the policy debate think that local units of government, the governmental level usually responsible for land use decisions, should have a say in the type of use to which a Superfund site should be returned after cleanup. Others think that it may be adequate to make Superfund sites usable for commercial and industrial purposes, even if land use restrictions have to be imposed to make sure that the land is not used for other purposes in the future.

In evaluating the pros and cons of different ways to define permanence, we urge the Subcommittee to take into account that land uses in many inner city areas and older suburbs, where many Superfund sites are located, are likely to change dramatically in future years. This is also the case in many older medium sized cities where the industrial base is changing and new land uses are being developed. In addition, local governments can be expected to revise their land use plans and to modify and grant variances to established zoning patterns. Land use is not static. For example, in the cities of Minneapolis and St. Paul, land along the Mississippi riverfront that was used for industrial purposes for a hundred years is now being redeveloped for parkways and residential uses. All of these factors should be taken into account in deciding what level of land use a permanent Superfund remedy should aim for.

The second part of "permanence" in the Minnesota approach is to achieve a net reduction in overall risk as a result of cleaning up the Superfund site. This requires consideration of the fate of hazardous substances that are subject to treatment or removal from the Superfund site, and the risks to human health that are created by those activities.

In the SARA amendments, when Congress set specific requirements for remedial goals and cleanup standards in Section 121 of CERCLA it required the President to select a Superfund remedy that is protective of human health and the environment, that is cost-effective, and that utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. [5]

However, CERCLA does not define what is meant by "permanent solutions" nor does it provide clear direction to EPA about the priority that should be given to permanence in remedy selection. EPA's Superfund program rules also do not define permanence and, instead of singling it out as an important overall goal of all cleanups, those rules relegate permanence to part of one criteria in its "balancing of criteria" approach to remedy selection Congress needs to give clearer direction in the statute by defining permanence and stating more specifically how this goal should be made a priority in the remedy selection process.

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[5] 42 U.S.C. Section 9621(b)(1)

3. *Numerical Cleanup Standards and Scientific Models for Setting Cleanup Standards to Replace "Relevant and Appropriate" Requirements and Risk Assessment*

The Superfund cleanup program differs from many other environmental programs in several important ways. It is a remedial program, rather than a pollution prevention or control program. Enforcement is based on a liability scheme that identifies persons responsible for cleanup, rather than on regulations and permits. When enforcement does not achieve cleanup, public funds may be available to remedy the site. The difference most relevant to this discussion of cleanup goals and remedy selection is that no new pollution standards were created to guide Superfund cleanups. Instead, Superfund looks to standards set by other programs for other purposes. Under CERCLA, Superfund cleanups must meet any federal (or more stringent state) environmental standard, requirement, criterion or limitation that is either "legally applicable" to the hazardous substance present at the site, or that is "relevant and appropriate under the circumstances of the release or threatened release." [6]

As long as "applicable" requirements can be identified as a standards for Superfund remedies, the ARARs system is relatively straightforward and subject to little dispute. However, for many hazardous substances there are no applicable limits for contaminated environmental media, especially for ground water and soil. Thus, standard-setting for cleanup of these media must rely either on identifying requirements that are "relevant and appropriate under the circumstances of the release or threatened release" or that can be established based upon a site-specific risk assessment study. Both of these alternatives are potentially expensive in time and resources and are subject to differing judgments by federal and state agencies and responsible parties engaged in the cleanup process, thus providing a source of contention and delay in the process. Additional uncertainty is created because of the lack of a single, uniform risk level that all cleanups are expected to achieve. Without such a uniform risk level, there is no risk standard against which to measure the adequacy of relevant and appropriate requirements or of standards based on site-specific risk assessment studies.

Minnesota believes that the federal Superfund program should move as rapidly as possible to replace "relevant and appropriate" requirements and the use of site by site risk assessment studies with objective, numerical standards for hazardous substances. Such standards are needed especially for contaminated soil, for which there are most often no identifiable ARARs. EPA, in its recently announced Superfund Administrative Improvements, has begun to move in the direction of numerical standards for soil cleanups by directing the establishment of "soil trigger levels." [7] These trigger levels will be used as a screening mechanism to determine which areas of soil contamination require further remedial attention, and may be used as cleanup levels at sites where the exposure pathways correspond to the pathways used to set the trigger levels. In explaining the reasons for its soil trigger level initiative, EPA notes that the current system of setting soil cleanup levels "takes significant time and effort" and involves "uncertainty about the hazards and the liability associated with levels of [soil] contamination." [8]

Minnesota recommends that Congress direct EPA to move as rapidly as possible to establish numerical cleanup standards for Superfund cleanups, beginning with the substances most commonly identified at Superfund sites. The standards should be based on the concentration limits necessary to achieve the uniform risk level that Congress sets as the target for all Superfund cleanups, as recommended in item 2 of this approach. Once adopted, these standards should be the national minimum standards for cleanup. A numerical standard could be accompanied by variance factors that could take some site specific information into account. As an alternative to specific numerical standards, EPA could adopt scientific models that could be applied to derive numerical standards based upon site specific data. However, it should be a goal of any new standard setting process to reduce the need for extensive site-specific data gathering that currently makes the remedy selection process more time-consuming, expensive and contentious.

Once a national minimum standard has been set that is applicable to a particular substance and environmental medium, that standard could be given legal precedence over state standards that are only "relevant and appropriate" but not "applicable;" although states should retain the authority, similar to the authority they ex-

[6] 42 U.S.C. Section 121(d).

[7] EPA, "Superfund Administrative Improvements," Final Report, June 23,1993, Initiative 6, at 25-27.

[8] Id., at 25.

ercise under other environmental programs, to adopt and require achievement of "applicable" standards that are more stringent than the federal minimums.

Even with clear Congressional direction to move expeditiously in developing numerical cleanup standards for Superfund sites, this development likely will continue over a period of years before applicable standards become available for most hazardous substances. Until specific standards and models are available, the relevant and appropriate requirement prong of the AAARs system would continue to be used to identify cleanup standards. As an interim improvement, to minimize site-specific determinations of relevant and appropriate standards, EPA could be directed to adopt rules or guidance to "codify" relevant and appropriate standards that can be used for certain categories of hazardous substances, releases, or site locations.

A number of states are already developing numerical standards or models for setting such standards for cleanups under state programs. It is our understanding that New Jersey and Michigan are developing or applying numerical standards for soil contamination, and Minnesota uses a model for back calculating the contamination levels to which soil must be cleaned in order to protect underlying ground water from pollution.

4. *Improving the Remedy Selection process*

Under the Minnesota approach, the Superfund remedy selection process would be restructured and streamlined in several ways. The proposed changes already described in this testimony will play a major role in streamlining the process. By adopting a single, uniform risk level for all cleanups and numerical cleanup standards and other objective means for determining cleanup requirements, the time, resources, and potential for dispute involved in remedy selection should all be reduced. In addition, the Minnesota approach includes three other changes in the current remedy selection process. First, the overall goal of achieving permanent remedies would be given a clear priority in the remedy selection process. Second, the balancing of criteria approach to selecting remedies currently employed by EPA would be simplified and employed only when a permanent remedy cannot be selected. Third, by establishing technology-based cleanup standards and presumptive remedies, the range of remedial options required to be evaluated in the remedy selection process would be reduced. These three elements are discussed below.

A. Clear Priority for Permanence in Remedy Selection

Under the Minnesota approach, remedy selection would first be required to focus on a permanent remedy that meets the national, uniform target level for risk to human health. If a technology or mix of technologies can be identified that achieves such a remedy, that should be the selected remedy. There would be three considerations to be applied before final selection of such a remedy. First, consideration would be given to whether the remedy produces a net reduction of risk to human health; that is, implementation of the remedy should not lead to disproportionate additional risk to human health through off-site treatment or disposal or other effects of implementing the remedy. Second, the technologies selected must be feasible; that is, they must be available and capable of application in the circumstances of the particular site and have been demonstrated to be successful at least in pilot tests. Third, the total cost of implementing the permanent remedy should not be grossly out of proportion to the benefits provided by a full and final remedy. Congress should provide some guidance to EPA in determining when the cost of a permanent remedy is "grossly disproportionate" to its benefits. Such guidance would recognize that, on the one hand, what society is wiling to pay to fully achieve its environmental goals is not unlimited but, on the other hand, the benefits to society of a full and final cleanup that restores the ability to freely use a formerly contaminated site can be very significant both for public health and safety, and for local and national economy.

B. Use of "Balancing of Criteria" Approach to Select "Next Best" Remedy if No Permanent Remedy Can Be Selected

Currently, EPA uses a balancing of criteria approach to select all remedies under CERCLA [9] In this approach, the permanence of a remedy is part of one of the five balancing criteria used to determine the remedy for a particular site. While permanence and long-term effectiveness of a remedy are to be given "emphasis" in the balancing of the criteria, the nature and degree of emphasis given to permanent remedies is not specified. EPA's balancing of criteria approach seems to aim at preserving a high degree of flexibility in selecting Superfund remedies. This is under-

[9] See, the National Contingency Plan, 40 CFR Section 300.430.

standable given the complexity and unique problems presented by many Superfund sites. However, the balancing approach is so "flexible" that it ultimately allows EPA subjectively to select one of the alternative remedies identified for a particular site and then to justify its selection by how it measures the -alternative against each of the criteria, and how it determines the "best balance of tradeoffs among the alternatives." [10] The primary problem with the balancing approach to remedy selection is not the potential for abusing the flexibility of the system by selecting inadequate remedies (though that potential exists), but the lack of accountability and consistency produced by such a system. It allows decision-makers to "bury" the real reasons for remedy selection decisions in a murky analysis of multiple factors and considerations that are somehow "balanced" against one another to reach a reasonable result. It will almost inevitably create disputes between EPA, States, and responsible parties, and skepticism and misunderstanding in communities affected by cleanups.

The approach suggested by Minnesota eliminates the use of a balancing approach when a permanent remedy can be selected as outlined in item 4.A. above. When a permanent remedy cannot be selected, the Minnesota approach would sanction the use of a simplified balancing approach to select the "next best" remedy. The "next best" remedy would be defined as a remedy that uses feasible technology (or technologies) to provide the degree of permanence and protection for human health that most closely approximates the overall Superfund cleanup goals (the uniform, national risk level and permanence as defined by the statute). Alternative remedies that produce similar levels of cleanup would be evaluated using criteria similar to those now employed in the balancing approach, including long-term effectiveness, implementability, short-term risks, and total costs (including operation and maintenance required after completion of construction).

One significant difference between this approach and the current remedy selection process is that, under the Minnesota approach, a "next best" remedy could be selected that does not meet the overall statutory goal for protection of human health (the uniform risk level) if there are no feasible technologies to achieve it or such technologies are prohibitively expensive to implement. However, a site where such a remedy is implemented would have to be subject to very stringent controls on use and access. More importantly, it would require regular review by EPA to determine if new technologies have become available that could further reduce the risk to human health and achieve a permanent remedy, and to see that such technologies are implemented through further remedial actions.

Under the current remedy selection process, a remedy that relies on land use and access restrictions to control exposure to unremedied contamination may be selected as fully protective of human health under CERCLA As such, EPA would not require any further remedial action to remedy the source of the exposure as long as the land use and access restrictions remain effective. Minnesota believes that this result does not meet the legitimate needs and expectations of the public, particularly communities affected by contaminated sites. The Superfund program should assure that remedies that rely on land use and access restrictions to protect human health are subject to regular agency review and that sources of funds are available for further remedial action so that such sites will get cleaned up when technologies are available to do it. There are several ways that the program could assures such protection, including: preserving liability of responsible parties to take further remedial action when EPA determines further risk reduction can be achieved; requiring responsible parties to create trust funds for further remediation or to pay for replacement of natural resources in return for releases from further liability; or assumption of responsibility by EPA to implement further remedial actions using public funds.

C. Technology-Based Cleanup Standards and Presumptive Remedies

The remedy selection process could be further simplified and streamlined by limiting the evaluation of remedy alternatives to fewer options based on identification of remedies that have proven successful at similar sites ("presumptive remedies") or on establishment of cleanup standards consisting of feasible technologies that, for certain types of contamination, are known to be capable of achieving the uniform risk level and permanent remedy("technology-based cleanup standards"). The use of presumptive remedies and technology-based cleanup standards would speed up the determination of whether there is a permanent and fully protective remedy for a particular site. Variations of these concepts could be used to identify remedies and technologies for consideration in selecting the "next best" remedy when a perma-

[10] See, National Contingency Plan, 40 CFR Section 300.430(f)(1)(E) and (f)(4).

nent remedy cannot be selected. By allowing the process to focus on a narrow range of options that match the contamination or other circumstances of a particular site, rather than evaluating all "feasible" alternatives as currently required, this approach simplifies and speeds up the remedy selection process.

SUMMARY OF BENEFITS OF MINNESOTA APPROACH

We believe that the Minnesota approach of defining overall national cleanup goals (uniform risk level and permanent remedies), applying objective and numeric cleanup standards, and restructuring the remedy selection decision making process under CERCLA cart produce many benefits. First and foremost, it would set the Superfund program on a clear path, with clearly defined overall cleanup goals and a remedy selection process that should produce more consistent results at less cost in time and resources for government agencies and responsible parties. In many cases, it would replace the cumbersome and complex process currently used to select remedies (using a wide risk range to determine protectiveness and a balancing of criteria approach to select among alternatives) with a relatively simple decision that focuses on identifying a feasible, cleanup technology (with priority given to one that meets the uniform risk level and permanence goals of the program) and evaluating whether the costs of implementation are grossly disproportionate to the benefits. Where a balancing approach is retained, it would be simplified and streamlined. This approach should significantly reduce uncertainty, subjective judgments, and disputes in the remedy selection process.

By enhancing accountability for the way remedies are selected and assuring a greater degree of consistency of remedial results from site to site, this approach can encourage EPA to delegate remedy selection authority to the states with confidence that it can adequately evaluate state compliance with national goals, and standards and procedures. Remedy selection delegation should promote increased State participation in the federal Superfund program and facilitate more and faster cleanups of Superfund sites than EPA could accomplish without such State participation. To the extent that relevant and appropriate standards continue to be a necessary part of the remedy selection process, delegation of remedy selection to states will avoid intergovernmental disputes about which standards are used for particular remedies. Finally, by assuring that all Superfund sites will be subject to uniform national cleanup goals and minimum cleanup standards, the approach should help meet the concern for environmental justice expressed by some communities affected by Superfund cleanups.

ISSUES NOT ADDRESSED IN MINNESOTA APPROACH: PRIORITIZING SUPERFUND SITES

One issue which the Subcommittee asked witnesses to address at this hearing which is not addressed in the Minnesota approach to the remedy selection process as described above is the issue of how sites are currently prioritized in the federal Superfund program. Minnesota offers the following comments on this issue. First, the current NPL does not accurately reflect the magnitude of sites requiring cleanup nationwide. The NPL consists of sites with Hazard Ranking System (HRS) scores of 28.5 or more. This is not only an arbitrary scoring cutoff but the HRS itself provides only a very preliminary screening of the potential hazards posed by Superfund sites. The actual number of uncontrolled releases of hazardous substances requiring cleanup nationwide is probably at least ten times the number of sites currently listed on the NPL. In addition, few sites have been added to the NPL in recent years as EPA strives to show progress on sites previously listed and as some States become more reluctant to recommend sites for listing on the NPL to avoid conflict between State and federal cleanup programs. Minnesota favors a more inclusive nationwide list of sites that are known to require cleanup, regardless of their HRS score, combined with more active state participation in the cleanup process under some version of state delegation or authorization to administer the Superfund program on behalf of or in lieu of EPA Under this approach, there would be a need to select those sites on the more inclusive list that would be priorities for use of federal cleanup funds and for federal enforcement in non-delegated states.

This completes the testimony offered by the State of Minnesota. Thank you again for the opportunity to express these views to the Subcommittee.

Testimony by Dr. Edwin H. Clark, II, President, Clean Sites

INTRODUCTION

Mr. Chairman and Members of the Subcommittee, my name is Edwin Clark. I am the President of Clean Sites. I appreciate the opportunity to testify today on our analysis of criticisms related to site remedy selection and the cleanup standards process.

Clean Sites was formed in 1984 by a group of industry and environmental leaders and former senior government officials as a non-profit organization dedicated to solving the Nation's hazardous waste problems. With a Board of Directors comprised of representatives of business, academic, public service, and environmental interests, Clean Sites' efforts to improve and accelerate the cleanup process are directed toward conducting policy analysis, providing technical project management services at sites, and mediating and allocating cleanup costs among potentially responsible parties (PRPs). Our Board is currently working on a project to develop recommendations on Superfund Reauthorization. We are in the process of formulating our views now, and I will be in a position to comment on our recommendations in the Fall.

The Superfund program has been extremely contentious throughout its history. Few public programs have stimulated debates as intensive, extensive, and emotional.

Recently, however, this program has generated a quite remarkable degree of agreement. Everyone—private industry, environmental groups, community organizations, state and federal agencies, Congress, and even the President—all seem to agree. The cleanup program is not working the way it should.

Unfortunately, the harmony of that agreement quickly breaks down into a dissidence of diverse issues, concerns, and complaints. Everyone agrees that there are problems, some agree on what those problems are, but few agree on how they might be solved. Thus, the Administration and Congress are faced with turning this discord into some kind of reasonable and harmonious solution.

Clean Sites has been grappling with this same basic question, and, along with other organizations, has been searching for areas of agreement and possible consensus. I wish I could report that we have been completely successful in this endeavor. Unfortunately, we have not.

However, we have identified some areas of agreement. One important area, I believe, is with respect to the basic goals of the program. Different stakeholders might use different words, but most generally agree that the following are three goals of remedial actions taken under the program:

1. The cleanups should effectively eliminate any unreasonable risks to public health or the environment from the contaminated site.
2. The cleanups should be cost-effective.
3. The cleanups should proceed as rapidly as possible.

These goals, of course, are not new. They are, for instance, precisely the goals that stimulated a coalition of chemical companies and environmental organizations to establish Clean Sites nine years ago.

The intensity of the concerns being expressed about the program certainly suggests that not all of these goals have been obtained. But it is not clear, in the cacophony of complaints, where the biggest problems lie. Are we seriously missing all of these goals, or are we missing some more than others?

For this reason, we thought it might be useful to sort through the many concerns that are being expressed about the way the program is being implemented, and evaluate those concerns by these three criteria.

The initial results of this effort, focusing on concerns expressed about the remedy selection process, are summarized in the attached table. On the left side we list some of the most commonly cited criticisms about Superfund. For each criticism we've asked whether it's a problem because it: (1) increases risk to human health or the environment; (2) decreases the speed of cleanup; or (3) increases the cost of cleanup?

A quick glance at this table leads to two observations:

First, few of the criticisms relate to increasing risks to human health or the environment. Given available technology, the Superfund law apparently is working to reduce risks to human health and the environment.

Second, most of the factors that serve to increase cost, an issue of substantial concern to the PRPs, also result in delaying cleanups, a concern to everyone.

Preliminary assessment of ways in which various criticisms affect Superfund cleanups (9-7-93)

Criticism	Increases Risk	Increases Cost	Decreases Speed
The way in which the nine statutory remedy selection criteria should be weighed are uncertain and confusing.			√
The remedy selection process often fails to adequately consider short-term risks.	√		
Chemical-specific Federal and state relevant and appropriate requirements often impose restrictions beyond what is necessary for protection of human health or environment.		√	√
ARARs may result in cleanup objectives that are not technically achievable.		√	√
Future resource use is not considered before remedy selection and implementation.	√	√	√
Failure to involve the public early and meaningfully in cleanup process can lead to disagreement at the later stages.		√	√
Overlapping responsibilities of state and federal governments lead to duplication of work, make PRPs hesitant to cooperate, and slow the development of a sound remedy.		√	√
Adequate incentives do not exist to promote use of innovative technology.		√	√
Risk assessments lack certainty because of inadequate data, and sometimes lead to overly conservative risk estimates.	?	√	√

I would like to go beyond these generalizations and evaluate some of the specific criticisms we have seen at sites we have worked on, or have heard voiced through our extensive effort to identify the concerns that the different stakeholders have about the process. This identification process involved a series of seven national forums held in conjunction with our Superfund Reauthorization Project. I do not have time to discuss all of these issues, but let me focus on a few.

CONCERNS AND POSSIBLE ALTERNATIVES

One concern that we have testified about previously is that the future use of the site and associated resources is not explicitly considered early enough in the remedy selection process. In some cases this could result in increased risk—if the future use is incompatible with or violates the integrity of the remedial action. Some people are also concerned that sites which are just fenced off will eventually not be managed properly and the remedial actions could begin to fail. There isn't enough history with the program, however, to indicate whether either of these is a real problem.

We are seeing, however, that the failure to consider future use is unnecessarily increasing the cost of remedial activities and delaying or preventing the subsequent return of the site to beneficial use. In this regard, we applaud EPA's announced intention to incorporate future use into the remedy selection process. In implementing its announced intentions, we hope EPA will fully involve the public and local government in this process. Failure to involve the public early in the cleanup process can lead to disagreement, delay, and increased costs at the later stages.

Another concern which we have raised to EPA, is that the remedy selection process often fails to adequately consider short-term risks associated with the proposed remedy. Our own site experience confirms that this is a problem. For instance, at one site where we are working, the proposed remedy is to remove substantial amounts of contaminated dirt by truck. The contaminants in the dirt present very low risks to life. However, the heavy truck traffic which the removal operation will generate has a high probability of causing fatal accidents. Statistically, a complete cleanup at these sites can be expected to cause more deaths than it saves.

Similar fears are frequently expressed about on-site incineration of the waste materials. We believe that it would be a good idea in the remedy selection process at every site, to evaluate

short-term risks associated with proposed remedial actions with the same degree of thoroughness as is used for long-term risks.

Another common concern is the cost and delay that the ARARS requirement imposes on site cleanups. Our experience strongly suggests that the RARS portion of ARARS is the primary cause of this problem. While they are often claimed to be "relevant and appropriate," they may not be, because they are not based on actual risks to human health or the environment at hazardous waste sites.

For example, at several sites where we are working, RARs would require the aquifer to be cleaned up to a level suited for drinking water, even though the natural brackishness of the aquifer effectively precludes this use.

By eliminating the RARs requirement, cleanups would be guided by those regulations that are truly applicable to each site and by the actual risks. This would ensure the protection of human health and the environment, while eliminating extraneous cleanup goals that currently drive up costs and slow cleanups. Thus, Congress may want to consider requiring enforcement of only applicable state or Federal regulations and eliminating those labeled "relevant and appropriate".

Finally, we cannot over emphasize the importance of improving the overall risk assessment process.

Inadequate information on toxicity, bioavailability, and exposure can result in underestimating some health and environmental risks. Often, however, these inadequacies stimulate the use of extremely conservative risk assessment assumptions which delay the process as the parties argue over the assumptions, and substantially increase the cleanup costs.

The Smuggler's Mountain site in Aspen, Colorado, for instance, provides an example of the confusion caused by the current process. Here one would have expected high blood lead levels to have resulted from the high degree of lead contamination at the site. Blood sampling, however, showed no such relationship. Should the risk assessment have been based on the assumed effects, or those that were actually measured? Tens of millions of dollars ride on the answer. We found a similar discrepancy with respect to arsenic at a site we worked on.

No one in the Superfund policy debate wants to leave sites generating significant risks. However, there is real concern about tile amount of resources being devoted to dealing with risks that may not truly exist. This problem affects not only the remedial process at sites that are being addressed, but substantially reduces the re-

sources available for and slows our progress in addressing additional sites. Increasing the effort to standardize exposure assumptions, improve toxicological data, and rationalize tile process of combining site-specific data with theoretical assumptions could substantially speed and reduce the cost of our cleanup efforts.

CONCLUSION

Clearly the process of cleaning up the legacy of decades of environmental abuse could be proceeding much faster and much more efficiently than it is. Our preliminary analysis indicates that, given available technologies and resources, the main problem is not that we are failing to reduce risks adequately. Certainly there are some instances in which this may be the case. However, the main problems appear to be the inefficiencies and delays the current process generates.

It may be significant that the problems of high cost and excessive delays are highly correlated. This suggests that solving the one might help solve the other. If so, the nation could proceed much more expeditiously in addressing the thousands of sites that still await action, and as they wait, may be creating significant health or environmental risks of their own.

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PRESIDENT
Edwin H. Clark, II, Ph D

October 14, 1993

The Honorable Frank R. Lautenberg
United States Senate
SH-506 Hart Senate Office Building
Washington, D.C. 20510-3002

Dear Senator Lautenberg:

This letter is in response to your request, subsequent to my testimony on September 9 regarding the Superfund cleanup process, for more detailed views on how Clean Sites would improve the current risk assessment process. I apologize for the lateness of this response and appreciate the opportunity to convey our views.

Our views on improving risk assessment are included here as Attachment 1. After the hearing, Leonard Shen asked me about our views on the CERCLA Section 121 requirement for permanence. Attachment 2 addresses that topic.

Thank you for the opportunity to express Clean Sites' views. If you or your staff have any questions, I can be reached at (703) 739-1241.

Sincerely,

Edwin H. Clark, II

Edwin H. Clark
President

Attachments

Attachment 1

CLEAN SITES
IMPROVING SUPERFUND RISK ASSESSMENT

The question of how to improve the risk assessment process has been one of the most controversial issues facing EPA for the past decade and a half. With the substantial effort and debate that has been directed at this question, it has become obvious that there is no simple answer.

With respect to Superfund sites, Clean Sites sees three complimentary opportunities for improvement. The first of these could be implemented quickly. The second would require a little longer. And the third requires a continuing, long term commitment.

The first opportunity is to make more and better use of site specific data in the risk assessment. If a site may have created significant human exposure to hazardous substances, ATSDR should conduct the community health assessment (called for in CERCLA Section 104) as early in the process as possible, preferably as soon as the site is listed on the NPL. This assessment should not be limited to helping the community identify any health problems they may have, but also should produce information about exposure levels, bioavailability, contaminant fate and transport, and possible types of health effects, all of which should be used in the risk assessment process. If this were done, both the community and the PRPs would know that the risk assessments were based on actual conditions at the site rather than on theoretical assumptions.

The second opportunity is to ensure that EPA is using state-of-the-art risk assessment procedures and assumptions. This recommendation is not directed solely at the cancer dose response curves that are the focus of so much criticism. We need to make sure that we are using the best information regarding realistic exposure levels, bioavailability, contaminant fate and transport, and sensitivity to other health effects (such as birth defects, toxic effects on the immune system, sub-clinical effects, etc.) We also need to ensure that the mathematical model used to convert this information into realistic risk assessments is the best available.

One way to ensure that the best possible methodologies are being used for risk assessments would be to have the National Academy of Sciences conduct a periodic review to ensure that they represent the state-of-the-art methodologies.

The third opportunity is to improve the information and scientific base supporting risk assessments. EPA, the National Institutes of Health, and other federal agencies have devoted substantial effort and resources to this purpose over the past two decades in research and toxicological testing. Progress in this area is both expensive and slow. It is also very important.

We believe, therefore, that stable long term funding should be provided for toxicological research, and that government agencies increase their efforts to coordinate and focus their research where it will have the biggest payoff. What is important is being able to assure communities that we are not underestimating the real risks they may be facing, and being able to assure PRPs and taxpayers that they are not spending large amounts to control risks that do not really exist.

Attachment 2

CLEAN SITES
CERCLA SECTION 121 REQUIREMENT FOR PERMANENCE

The debate over the preference for permanence is probably less a question of whether such a preference should exist than of how significant that preference should be. PRPs and all other stakeholders would undoubtedly prefer a "permanent" remedy[1] if it cost no more than an alternative nonpermanent remedy and provided the same reduction in risk. PRPs, however, strongly resist paying higher remediation costs to meet a regulator's definition of permanence if these expenditures produce no discernible benefits. How much, they ask, is "permanence" worth?

The cost differential between permanent and nonpermanent remedies is not the only factor that should be taken into account in answering this question. Two other important factors are the probability that the non-permanent remedy will fail, and the risks to human health and the environment that could result from such a failure. As the 1993 floods throughout the Midwest demonstrated, capping and other nonpermanent remedies have a higher probability of failure when applied to sites located in flood plains than when applied to sites located on higher land. However, earthquakes, sinkholes, fluctuating water tables, and other factors also can cause failures. It is possible to estimate the probability of occurrence for most of these situations.

At some sites, the failure of a remedy could result in significant risks to human health or the environment, for instance, if toxic substances would be carried into a community's water supply. At other sites, these risks would be much less, for instance, if the contaminants had very low toxicity or if no communities or valuable ecosystems would be exposed even if the remedy were to fail.

Once the questions of probability and risk are answered, it is possible to give a more rational answer to the question - How much is permanence worth? If both the probability of failure and the risks that would result from failure of the nonpermanent remedy are small, permanence is worth relatively little. However, if the consequence of failure is large, permanence may be worth a great deal.

Clean Sites recommends that Congress provide some guidance to decisionmakers about this issue. For instance, in the conference report accompanying the reauthorization of Superfund, Congress could indicate that if the chance of the best nonpermanent alternative remedy's failing and causing significant risks to human health and the environment is extremely small, a permanent remedy should be preferred only if the cost differential between it and the best nonpermanent alternative is less than 20 percent. For cases of a higher probability of failure or higher risks resulting from failure, the strength of preference for a permanent remedy would increase. In addition, Congress might indicate a maximum cost preference for permanence.

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1. In *Improving Remedy Selection* (Oct., 1990), Clean Sites defined permanent remedies as follows: "Permanent solutions are those that will endure indefinitely without posing the threat of any future release that would increase the risk above levels established for the site."

Testimony of Linda E. Greer, Ph.D., Senior Scientist with the Public Health Program of the Natural Resources Defense Council

Good morning. I am Linda E. Greer, Ph.D, Senior Scientist with the Public Health program of the Natural Resources Defense Council (NRDC). NRDC is a private, not-for-profit, public interest environmental organization with over 170,000 members nationwide. NRDC participated in the original authorization of the Superfund program in 1980 as well as the Act's reauthorization in 1986.

NRDC has overseen the implementation of the Superfund program since its inception. We have participated in key rulemakings, published reports about progress in the program, provided technical and legal advise to communities affected by Superfund sites, and undertaken systematic analyses of key issues affecting the success of the program over the last 12 years. Issues of concern to us over the years have most notably included remedy selection and identification of cleanup standards in the Superfund program. NRDC sits on the National Commission on Superfund, a self-appointed multi-interest group with membership at the CEO level, engaged in an attempt to reach a common understanding of the problems in Superfund and promising solutions. We also sit on EPA's NACEPT Committee, which was set up by Carol Browner for advise during the development of Administration positions on Superfund legislative reform. In addition to this work, I am a member of the National Academy of Sciences National Research Council (NRC) Committee on Groundwater Cleanup Alternatives, a Committee that is currently reviewing the technical limitations of groundwater cleanup of dense non-aqueous phase liquids (DNAPL), a key issue in remedy selection. The NRC Committee is completing a report on DNAPLs that is expected to be released in early 1994. I very much appreciate the opportunity to testify today.

Although the most widely proclaimed problem in Superfund is the alleged fact that "too much money is being spent on lawyers", issues surrounding site remedy selection are in my opinion more responsible for the program's stumblings. Further, of all the problems facing the Superfund program, issues surrounding remedy selection clearly are some of the most intractable. The technical difficulties in resolving these issues at sites are immense. These difficulties have been compounded by the fact that until only recently, EPA ran a very decentralized Superfund program and provided inadequate guidance to poorly staffed Regions for site-specific decisionmaking. As a result, considerable debate, dialogue, and negotiation surround the resolution of cleanup issues. Even today, there is insufficient commitment by EPA headquarters to centralize key Superfund decisionmaking processes to help the program become a success.

Further exacerbating the remedy selection problem is the lack of Headquarters analysis of the operation of key aspects of the Superfund program in the Regions. In fact, perhaps the single most important factor limiting debate in Congress and in the public on issues related to remedy selection is an almost complete lack of systematic data on the way EPA actually selects remedies in the field. In the absence of systematic data collection and policy analysis, the debate about remedy selection has to date been ill-informed and based nearly exclusively on anecdotes about site-specific problems industry has faced or feel they are likely to face in the future. Both press coverage of the program and Congressional debate suffers tremendously from a lack of information about the actual way in which sites are addressed the Superfund program.

In light of the paucity of existing data and analysis, I urge the Subcommittee to analyze for itself the problems in remedy selection—prior to attempting to solve problems that allegedly exist in the program without sufficient basis to conclude that the problems identified are both real and widespread.

Today I have been asked to focus my testimony on the role and importance of ARARs (applicable and/or relevant and appropriate standards) in remedy selection and the statutory preference for permanence. However, because it is so difficult to isolate only two or three components of the remedy selection process, my testimony also touches on several other key issues in remedy selection that are the subject of your next Superfund hearing, including land use, DNAPL (dense non-aqueous phase liquids), and innovative technology. I trust that the light that the inclusion of these issues sheds on my presentation today will more than compensate for the additional time it will take to discuss these additional factors.

APPLICABLE AND RELEVANT OR APPROPRIATE STANDARDS (ARARS)

In 1985/1986, when Congress was reauthorizing Superfund for the first time, it was faced with a disturbing lack of consistency in remedy selection in the program. Of course, few sites had been adequately studied, and fewer still had selected reme-

dies. But for those sites where cleanup decisions had been made, there was little rhyme or reason in the process that had been used to reach decisions. The widespread inconsistencies in remedy selection among sites undermined confidence in the environmental community that the range of remedies being selected in the program were in fact adequate to protect human health and the environment. The same inconsistencies undermined confidence in the industrial community that measures selected were not extreme but only at the level necessary for the statutory goal of protection.

Given EPA's extremely slow track-record in standard setting, and because it seemed to make sense for Superfund cleanups to be consistent with requirements "on the books" where similar circumstances arose, such as Safe Drinking Water standards for contamination of a potential drinking water source, Congress directed Superfund remedies to meet applicable and relevant and appropriate requirements under other state and federal environmental laws as the vehicle to ensure protection of human health and the environment.

Without question, ARARs have not delivered the consistency and confidence in remedy selection that the environmental community expected. This is undoubtedly in part due to EPA's early decision to distinguish applicable from relevant and appropriate in the rules it promulgated governing cleanup (i.e. in the National Contingency Plan, or NCP). According to the NCP, whereas applicable requirements were mandatory at sites, relevant and appropriate requirements were only "to be considered". Furthermore, the NCP provided an extremely narrow definition of what was legally applicable. For example, RCRA was deemed not applicable at Superfund sites unless the waste was a listed RCRA waste or flunked the RCRA characteristic and the waste was generated after 1980. Because many materials at Superfund sites are of unknown origin and were disposed prior to 1980, there are precious few Superfund sites where RCRA requirements have been judged to be applicable. And, where RCRA is only relevant and appropriate, the same inconsistencies in thinking about remedy selection that plagued the program prior to the last reauthorization are possible.

In addition, a key feature of the requirement to meet ARARs in SARA was the statutory waivers to the requirement. Congress provided explicit conditions under which EPA should not require ARARs to be met at a Superfund sites, including situations where the remedy was technologically infeasible and where the short-term risk of implementing the remedy exceeded the long-term risk from the site. Although EPA has recently begun initiatives to expand the use of the technological feasibility waiver (see DNAPL discussion below), the program has in general made virtually no use of the waivers.

This situation is obviously frustrating to industry, which feels aggrieved in those cases where ARARs arguably should not be applied. It is also frustrating to citizens—for less obvious reasons. If the statute worked as we anticipated, citizens would first be told what type of cleanup was required by other environmental laws. Then, if deviations were necessary, they would be only in the areas delineated by Congress, and arguments as to why, for example, protective levels for certain chemicals could not be achieved at a site, would be made in a sequential manner. Since EPA often fails to use ARARs in the first place, substituting a site-specific cleanup goal instead, it remains debatable within the community whether the cleanup level ultimately selected is actually protective of their health. Further, the reasons for the selection of a site-specific goal are often quite inscrutable and could include cost or impracticability or any one of a number of other factors not authorized by the statute. The community often learns that their cleanup level is inconsistent with one that has been selected for a similar site elsewhere, but it is nearly impossible to evaluate the reason for the inconsistency. Thus, EPA's failure to use waivers has undermined the integrity of the remedy selection process because it has allowed for the use of compromised cleanup standards up-front, without explanation.

For these and other reasons, ARARs have not done the job we expected from them 7 years ago. However, as with nearly every issue in Superfund, the key to solving the problem with ARARs lies not with simply identifying that a problem exists but in developing a better alternative. *Despite their limitations, ARARs clearly cannot be eliminated from the statute without substitution, since this will lead to only greater inconsistency in remedy selection across the country, frustrating both citizens and industry alike.*

NRDC proposes that Superfund's statutory ARAR requirements be substantially revised and replaced with national soil and groundwater cleanup standards. Key elements of our proposal are as follows:

- EPA would be directed to develop soil and groundwater cleanup standards by a date certain for the 100 most frequently occurring contaminants in the pro-

gram. Soil numbers would be keyed to future land use. The Agency would develop a set of numbers that assumed future unrestricted (residential) land use—and additional numbers for sites where ecological protection is of concern. [1] Where future use was to be restricted, such as at an industrial site that would remain industrial in the future or be developed into a park, EPA would develop cleanup standards on a case by case basis, using site specific risk assessments. Groundwater standards would be applied to the cleanup of all usable groundwater. Federal Drinking Water Standards would be used for those contaminants found in the list of the top 100 chemicals in groundwater at Superfund sites.

- There would be at least one *statutory presumption* about future land use in the program: sites in residential areas would be presumed to be residential in the future and require cleanup to levels that would be protective without regard to type of restriction put on the land. However, there would be *local control* over the land use decision made at a site, in that the statute would allow for a local "override" of this statutory presumption, given certain conditions. These conditions would go to the issue of getting bona fide local input into the site decisionmaking process, as opposed to certain types of site characteristics.
- EPA cleanup numbers would target a single risk level rather than allow for a risk range. This eliminates the 100-fold difference in acceptable cleanup numbers across the country and is unnecessary once EPA can take land use into account in setting numbers.
- Soil cleanup numbers would be required to reflect hazards posed by multiple pathways of exposure, including leaching of chemicals into groundwater and volatilization into air, where relevant.

  Contrary to conventional wisdom which suggests that soil cleanup standards are invariably set based on the unrealistic scenario of kids eating buckets of dirt, soil cleanup standards are actually quite often set at a level necessary to protect an underlying aquifer. EPA would be directed to look at the environmental pathways potentially affected by contaminants in soil when developing its cleanup numbers.
- Where states had more stringent standards for soil or groundwater that had been promulgated for remedial situations, these more stringent standards would be applied instead of the federal numbers.

This requirement is narrower than the current use of state ARARs in that it eliminates state requirements that have not been explicitly promulgated for remedial situations.

NRDC has tailored this proposal to address the problems that the program has faced to date in remedy selection. A key feature of the proposal is that it will streamline the selection of cleanup standards for all sites, minimizing the number of contentious issues to be resolved on a site by site basis. The technical difficulties in determining standards, combined with the complicated politics surrounding remedy selection at Superfund sites, have together conspired to keep the program from success. We believe the approach will both speed cleanups and deliver consistent protection of human health and the environment at Superfund dumpsites around the country. [2]

Several issues in our proposal merit additional consideration and are under active discussion in the environmental community, including especially the reliance on restricting future land use when setting cleanup levels. Reliance on restrictions in land use to deliver protection from the hazards posed by hazardous waste raises a number of critical issues that must be resolved prior to the adoption of this approach. My colleague Karen Florini of the Environmental Defense Fund has recently raised the following critical issues for resolution if land use based decisionmaking is to be contemplated:

- How should the neighboring use of a site be considered when determining the future land use of a site, and what criteria are appropriately used in deciding? Clearly, the neighboring area that directly adjoins the site is relevant to future use, but what if there is a street in between? railroad tracks? a superhighway? a commercial mall? a park? a mile of other type of use?

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[1] Ambient Water Quality Standards set under the Clean Water Act should be used for assessing ecological protection where the site is adjacent to surface water.

[2] Despite the fact that our proposal requires a rulemaking, it will perhaps be rather straightforward for EPA to set these numbers, considering that the RCRA program has developed proposed cleanup levels in its RCRA corrective action proposed rule and also considering that the Superfund program is on the verge of issuing guidance to the Regions on cleanup standards for 30 commonly occurring chemicals. In addition, we strongly recommend that the statute include a "hammer" to force EPA to issue these cleanup standards in a timely manner.

- Assuming some sites will be cleaned up to less protective industrial standards, should communities be compensated for the fact that land within their jurisdiction has been encumbered? If so, how?
- How should conflicts be resolved concerning future land use of the site, particularly if nearby neighbors oppose restricted use classification while more remote neighbors support it?
- How feasible is it to limit site access for sites that are potentially industrial use but currently vacant?
- Even if "appropriate" industrial land use sites are identified, how can we be sure it will stay appropriate over time?
- Since you cannot properly alter a land use restriction in the absence of someone paying for the upgrade of the cleanup, what should be done if the community's need for the land changes over time?
- What are the appropriate mechanisms to restrict future inappropriate use of the land? Who would hold the restriction?

As these questions indicate, allowing for lesser cleanups of land which we currently envision as being used for only industrial purposes far into the future raises issues of great complexity. Some within the environmental community believe that such issues are too complex to be appropriately handled under the program and that for such reasons future land use should not be considered in selecting remedies.

STATUTORY PREFERENCE FOR PERMANENCE

In the debate surrounding the reauthorization of Superfund in 1986, the environmental community put great emphasis on the need to greatly enhance the use of permanent remedies at Superfund sites. Although there are some types of Superfund sites, such as municipal landfills, where permanent remedies are not practical (given generally the size and dilute nature of the toxic waste disposed) there are many sites where treatment should be used as one component of a complete remedy, targeted at chemical "hot spots" of high concentration or waste-like material. The 1986 statutory preference for treatment was based on experience that suggested that contained facilities (capped with clay on the surface and sometimes also contained with subsurface walls underground) were clearly unlikely to be successful remedies in the long run.

In 1985/1986, we believed that containment provided no more than short-term band-aid solutions to long-term festering contamination problems; that we were technically incapable of designing containment that would not ultimately leak; and that society was institutionally incapable of either ensuring that contained facilities would be properly maintained or that the land would not ultimately be put to use for a purpose inconsistent with residual contamination levels, such as occurred at the infamous Love Canal site in New York, etc.

Where do things stand on these issues seven years later, as we embark on another Superfund reauthorization? Not much has changed with regard to the technical limitations of containment. Although industry lobbyists inside the beltway like to characterize containment as a straightforward method to achieve permanent isolation of the waste from humans or the environment, even a quick look outside of the Beltway to assess the performance of contained facilities indicates that *containment can be considered only a short-term solution to the long-term problem of hazardous waste dumpsites.*

Attached to my testimony (Attachment 1) is an EPA list of 24 hazardous waste sites in Region VII that were recently flooded during the Mississippi's well-publicized floods. Curiously, there was no national press attention to the impact of the floods on these dumps, to the best of my knowledge. However, as the Table notes, there were numerous adverse effects of the floods on these sites: nearly all these sites were partially or totally submerged, drums were washed downstream, in situ treatment processes were under water, etc.

Clearly it does not take an advanced technical degree to realize that waste "isolated" at such sites using clay liners and covers for long-term protection would be unlikely to remain in place during and subsequent to this flood.

Massive flooding is not the only problem we face with caps, however. Several caps have reported problems with leachate either breaking through the surface of the cap or continuing to grossly contaminate groundwater. For example, the cap at the notorious Stringfellow Acid Pit site in California teaches an important lesson about the short-term nature containing hazardous materials on site. The five year drought in the state of California has recently ended, and as a consequence, the groundwater level in the state has risen. This rise in groundwater has caused the Stringfellow cap to split on several recent occasions due to groundwater surging up into the con-

tained waste and bursting through to the surface. As a consequence, the neighborhood around Stringfellow must once again be concerned about rainfall washing contaminants from the dump into their community. [3]

In additional ongoing work that NRDC has conducted in its oversight of the Superfund program to date, we have learned of a number of serious problems with containment. The problems we have uncovered are both technical and institutional. Rain and erosion is common at capped facilities, for example.

Several EPA project officers have brought to our attention the great difficulty in simply keeping grass on a cap and rodents from burrowing into the caps and thus breaching the liner. We have uncovered cases where no cap maintenance plan has been implemented at a site, despite the fact that construction of the cap was completed several years before. Finally, there have been cases where caps have actually collapsed due to poor design or installation and have needed complete reworking.

The institutional problems associated with capping are a much greater problem than we envisioned in 1986. It is common for EPA regional personnel to not know a single thing about ongoing maintenance of certain capped facilities. Where cleanups have been done under potentially responsible party (PRP) lead, for example, EPA generally knows literally nothing about the integrity of the cap, the maintenance that was designed for the cap, or the qualifications of personnel in charge of the cap—let alone the effectiveness of any long-term land use restrictions that were proposed at the time the capping remedy was selected. In some cases, EPA does not even know which PRP company is responsible for the maintenance of the cap. In other cases, the chief entity in charge of maintenance appears to be a local lawn care service. Thus, our long-term institutional capabilities to ensure that these contained facilities are well under control is clearly, clearly inadequate—much worse than we had originally imagined.

It is for these reasons that the environmental community strongly supports a continuation of the statutory preference for treatment. *Those who argue for the long-term integrity of containment are simply pretending that such capping can be done effectively and for the long term and ignoring EPA's long-held view that all contained facilities will eventually leak even under the best of circumstances.*

We do offer some fine-tuning for the statutory language on permanence for your consideration, however, as follows:

- The statute could be modified to specify *where* treatment was preferred at Superfund sites: for highly contaminated (e.g. "hot spot") material at all types of sites and at sites cleaning up to unrestricted future use cleanup levels. Such a provision would narrow an otherwise vague statutory preference and perhaps ensure greater consistency in remedy selection across the country.
- The statutory technological feasibility wavier should be maintained (even if the ARARs provisions are eliminated) for situations where it is determined that there is not technology available for a situations where a permanent remedy would otherwise be preferred. [4] The statute would allow for *interim containment* at these sites until the technology was developed and provide additional incentives for the development of improved technology for the Superfund program. EPA should be required to make a determination if adequate technology had developed every five years for sites that have been contained for the interim. Where technology has developed, PRPs should be required at that time to go back and permanently remedy these interim containments. PRPs should also

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[3] Based on conversation with Penny Newman, citizen of Glen Avon, California.

[4] One thing that has advanced since the mid-1980's is our understanding of the technical limitations of permanently remedying some types of contamination, especially dense nonaqueous phase liquids (DNAPLs). Using currently available technology, we cannot completely remove the subsurface pools of DNAPL contaminants. As a consequence, we must face the likelihood that at many DNAPL sites, the groundwater immediately under the site will not be permanently cleaned up to health-based levels of contaminants for the foreseeable future, at least until better technologies are developed. However, although it is clear that CERCLA was not explicitly designed to address DNAPL, the current law clearly can work, in my opinion, for the DNAPL situations we are facing today. Section 121 of SARA, for example, provides a technological infeasibility waiver perfectly designed for DNAPL in that it allows for a waiver to health based cleanup standards where the achievement of such standards is deemed to be technologically infeasible. SARA further requires permanent remedies only to the maximum extent practicable. These two existing sections alone appear to provide sufficient flexibility for capable administrative design of a DNAPL policy. Thus, although we would not automatically object to additional statutory specificity on how to remedy DNAPL sites, an administrative fix to the problems posed by these types of sites seems quite straight-forward to us. (See Attachment to this testimony for full discussion of the DNAPL issue.)

be required to pay an annual fee into a research fund for technology innovation for those sites which have interim containment structures.

- The statute should require a very "beefed up" monitoring and reporting regime for contained facilities—both those contained because treatment was not preferred and those contained on an interim basis where technology was not available. At a minimum, EPA should be required to identify criteria for determining whether containment is continuing to be effective at a site and require quarterly reporting of compliance that is citizen suit enforceable.
- The statute should also require EPA to develop performance and operating requirements for the treatment technologies applied at Superfund sites, much like the current incinerator standards on the books for the RCRA program. Such standards will more explicitly address the short term risks associated with remediation of Superfund sites. We expect that in developing these standards, EPA might determine that some technologies currently in use at Superfund sites cannot be operated in a manner that protects human health and the environment in some situations, and in these cases EPA should eliminate the use of that technology for inappropriate circumstances.

CONCLUSIONS

As this testimony indicates, issues concerning remedy selection at Superfund sites are technically highly complex, and their resolution is hindered by a lack of underlying data responsive to key policy questions. Recognizing the need to reauthorize Superfund quickly, we are nonetheless concerned to channel the debate of the hotly contentious issues in the program in productive areas where there is substantial basis to believe that real problems exist. It is also of the utmost priority to inject factual matters into the rhetoric now surrounding the characterization of the Superfund program to avoid legislating by anecdote rather than analysis. Without due care, we will wind up setting new directions for the program not likely to meet the real needs of the American public. We commend the Subcommittee for its measured approach in structuring this hearing on remedy selection and hope that as a result, comprehensive debate on "how clean is clean" will be greatly illuminated. Thank you very much for this opportunity to testify.

STATEMENT OF ATLANTIC RICHFIELD COMPANY, GENERAL ELECTRIC COMPANY, MONSANTO COMPANY, AND WMX TECHNOLOGIES

TO THE

SUBCOMMITTEE ON SUPERFUND, RECYCLING, AND SOLID WASTE MANAGEMENT

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

UNITED STATES SENATE

REGARDING

SUPERFUND REMEDY SELECTION REFORM

SEPTEMBER 9, 1993

OVERVIEW

The Atlantic Richfield Company ("ARCO"), General Electric Company ("GE"), Monsanto Company, and WMX Technologies (collectively, "the companies") welcome the opportunity to testify before this Subcommittee regarding the need for Superfund remedy selection reform and, in doing so, to present a proposal for resolving the problems with the current remedy selection process.

Each of the companies is represented on EPA's Superfund Evaluation Committee to the National Advisory Council for Environmental Policy and Technology ("NACEPT"), and each has extensive experience in all aspects of Superfund implementation. As part of the NACEPT process, the companies have developed a proposal for Superfund Remedy Selection Reform ("Proposal"),[1/] which we offered as a blueprint for the Administration's legislative proposal on remedy selection and hope will serve as the foundation for any action the Congress takes to address these issues.

Given their extensive experience and expertise in the remedy selection process, the companies are well suited to provide insight into the problems with the current system and recommend ways to improve it. Each of the companies has worked to implement Superfund over its 13 year existence, with the companies' expenditures on remediation from 1980 to 1992 totaling approximately $1.4 billion, and projected expenditures over the next two years estimated at more than $380 million per year. Combined, we have 360 sites on the National Priorities List ("NPL").[2/] We have completed more than 250 Remedial Investigations and Feasibility Studies ("RI/FSs") and have completed or are currently implementing more than 175 Remedial Design/Remedial Actions ("RD/RAs") at NPL sites.[3/] Finally, having worked closely with EPA, State and local agencies, and the communities surrounding sites, we understand first hand the varied and often conflicting interests of these stakeholders.

Our Proposal, developed initially for discussion in the NACEPT process, reflects the outcome of lengthy discussions among our companies and others to develop an improved, more effective approach to remedy selection that speeds the process and subsequent remedial actions. The companies believe that flaws in the current remedy selection process undermine Superfund's *fundamental goal* of expeditiously abating significant actual risks to human health and the environment through cost-effective methods based on accurate risk analysis. The flaws in the

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1/ The companies have also developed a proposal on reform of Superfund's liability scheme, which was submitted to NACEPT on August 17, 1993. In addition, the companies are developing discussion papers regarding Federal/State involvement in the Superfund program, municipal co-disposal sites, and natural resource damage issues.

2/ This total was derived by summing the number of NPL sites for each company. It does not take into account any site overlap among the companies. For example, there may be some sites at which two companies are PRPs. In such a situation, the site would be included in this list twice. This estimate is based on sites at which the companies are PRPs and does not include the more than 10,000 sites at which WMX has undertaken remedial action in its role as a contractor.

3/ As with the total number of NPL sites, these figures were derived by summing the number of RI/FSs and RD/RAs for each company. They do not take into account any site overlap among the companies.

current system flow in large measure from structural problems with the statute and are, therefore, most effectively cured through legislation rather than marginal administrative reforms. The Proposal cures the flaws in the statute so as to better promote Superfund's fundamental goal by:

- Establishing meaningful and workable standards for protection of human health and the environment and eliminating the preference for treatment-based permanent remedies and the ARARs requirement;

- Requiring EPA to develop and implement revised risk assessment procedures; and

- Providing for a more streamlined process which will result in less PRP resistance to the remedy selected and speed implementation of remedial actions that protect human health and the environment.

In short, the Proposal is intended to provide for faster remedial actions that ensure protection of human health and the environment at more sites and at a lower overall cost. The Proposal achieves these objectives by *moving away from* purely hypothetical risk estimates, treatment as the only acceptable final remedy, permanence requirements, and the mandatory use of legally applicable or relevant and appropriate requirements ("ARARs") from other Federal and State environmental laws; and by *moving to* a system that provides for clear and workable health and environmental standards and more cost-effective remedies based on all available site-specific data and reasonable assumptions regarding exposure, toxicity, and risk. When resources are distributed in the most cost-effective way, a greater number of sites can be addressed at a faster pace.

In developing the Proposal, we have attempted to take into account the interests of other stakeholders, and we will continue to seek the views of other interested parties. We are particularly interested in enhancing the dialogue with State and local governments and with community representatives to develop mechanisms for additional State, local, and public participation in the process, which we believe is essential to the ultimate success of the program.

Each of the companies is committed to achieving environmental goals while maintaining and improving the nation's productive capacity. We are also committed to ensuring that society's limited resources are spent wisely. The waste of money and resources associated with the Superfund program, which is not only unwise but also detrimental to human health, the environment, and the economic well-being of the people of this country, cannot be tolerated any longer. The companies stand ready to assist the Congress and the Administration in their efforts to improve the system, and we appreciate this Subcommittee's consideration of the views presented below.

The companies commend EPA for its serious efforts to provide for administrative improvements to Superfund, but believe, as does EPA,[4/] that the changes needed to effectuate the most comprehensive and permanent improvements to the remedy selection process cannot be achieved *solely* through administrative reforms. Experience of all stakeholders over the past 13 years has proven that the statute itself is an obstacle to an effective program, and Congress must address these problems by adopting legislative reforms. We also commend this Subcommittee for its work to address the problems created by the statutory scheme. We look forward to working with both Houses of Congress and the Administration to achieve meaningful reform of the current Superfund system in order to redirect the program to its fundamental goal: protecting human health and the environment by expeditiously reducing actual, significant risks posed by contaminated sites in the most cost-effective manner possible.

4/ Final Report, U.S. Environmental Protection Agency, Superfund Administrative Improvements, Executive Summary at 12 (June 23, 1993).

DISCUSSION

The discussion below is organized into two sections. Section I describes the flaws in the current remedy selection process and explains how those flaws have worked to prevent EPA and potentially responsible parties ("PRPs") from achieving expeditious reduction of risk to human health. This section also provides brief examples illustrating the problems with the current system. Section II summarizes our Proposal for reform of the remedy selection process, explaining how the Proposal will rectify the statutory flaws. Finally, included as appendices to this testimony are the following materials, which support and explain specific points made below: (1) Proposal for Superfund Remedy Selection Reform submitted to NACEPT on July 30, 1993 and (2) Superfund Reform: Containment versus Incineration Technologies.[5/]

I. Flaws in the Current Remedy Selection Process Undermine Superfund's Fundamental Goal.

The *fundamental goal* of Superfund is to provide for protection of human health and the environment by abating significant, actual risks posed by contaminated sites in an expeditious and cost-effective manner. Based on the last 13 years of experience, it is now widely recognized that this goal is not being met -- in terms of protection, speed, or cost.

The average cost of cleanup for an NPL site is climbing at an alarming rate. Early in the program, EPA estimated cleanup costs at $7 million per site.[6/] EPA has since revised this estimate, however, to $25 million per site,[7/] while still others believe that $40 to $50 million is a more accurate estimate.[8/] The number of sites on the NPL has also grown substantially from about 400 in 1982[9/] to more than 1200 at present.[10/] EPA projects 2100 Superfund sites

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5/ Geraghty & Miller, Inc. (for Monsanto Co.), Superfund Reform: Containment versus Incineration Technologies (July 22, 1993).

6/ Hazardous Waste Cleanup Project, Sticker Shock: Recognizing the Full Cost of Superfund Cleanups, at 4 (June 1993) (citing U.S. Congress Office of Technology Assessment, Coming Clean: Superfund's Problems Can Be Solved OTA-ITE-433, Washington, D.C.: U.S. Government Printing Office (October 1989), at 108).

7/ Id.

8/ Id. (citing Paul R. Portney, The Economics of Hazardous Waste Regulation, paper delivered at an 11/7/91 symposium on U.S. Waste Management Policies: Impact on Economic Growth and Investment Strategies, American Council for Capital Foundation, Center for Policy Research (May 1992); Russell, Colglazier and English, Hazardous Waste Remediation: The Task Ahead, Hazardous Waste Remediation Project, Waste Management Research and Education Institute, University of Tennessee (Dec. 1991)).

9/ Id. (citing 47 Fed. Reg. 58476 (1982)).

10/ Id. (citing Environmental Protection Agency, End of FY 92 Superfund Management Report, Office of Solid Waste and Emergency Response (November 1992)).

by the end of the century and researchers at the University of Tennessee recently chose 6,000 sites as a plausible upper-end figure for the ultimate size of the "non-federal" problem.[11/]

The increase in both individual site remediation costs and the number of sites on the NPL has resulted in a corresponding increase in the total cost of the Superfund program that was clearly unanticipated when Superfund was first enacted and when it was reauthorized in 1986. EPA expects to spend a total of 27.2 billion on cleaning up the first 1236 sites on the NPL, including $16.4 billion in fiscal years 1993 and beyond.[12/] Substantial related expenditures will be required by the Departments of Defense and Energy and by other agencies responsible for Federally owned hazardous waste sites. The Congressional Budget Office ("CBO") estimates further, based on the projected increases in sites on the NPL, that the remaining Superfund liability for nonfederal sites may be between $35 billion and $125 billion.[13/]

In addition, the remedy selection process is extraordinarily cumbersome and slow, which results in a slow pace for achieving cleanups. Only 40 sites have been deleted from the NPL, and construction work has been completed at another 109 sites. Some estimate that it will soon take an *average* of 15 years for a site to move from listing on the NPL to delisting after completion of the remedy.[14/]

The companies believe that, while many aspects of the Superfund program deserve Congress' careful attention in the reauthorization process, reform of the remedy selection process is the cornerstone of any attempt to change Superfund in a way that avoids these excessive costs and delays and gets on with the business of protecting human health and the environment.

A. *The Remedy Selection Process Is Broken -- And Congress Needs to Fix It.*

The fundamental weakness of Superfund's remedy selection provisions lies in the multiplicity of often conflicting and overly stringent directives not related to protection of human health and the environment. This complex mix of standards has led to imposition of costly remedies without corresponding benefits in terms of protection of human health and the environment. The statute creates a preference for treatment-based remedies that permanently

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11/ Congressional Budget Office, Reducing the Deficit: Spending and Revenue Options 155 (Feb. 1993).

12/ Id.

13/ Id. In addition, the University of Tennessee Report states that the Superfund program will cost approximately $151 billion (with a plausible lower bound of $106 billion and a plausible upper bound of $302 billion) over the next 30 years excluding expenditures (1) for RCRA corrective action, (2) for underground storage tank cleanup, (3) by the Department of Defense, (4) by the Department of Energy, and (5) under State and private programs. Russell, Colglazier and English, Hazardous Waste Remediation: The Task Ahead, Hazardous Waste Remediation Project, Waste Management Research and Education Institute, University of Tennessee at 16 (Dec. 1991)).

14/ Leslie Cheek, III, Salvaging Superfund, Best's Review: Property-Casualty Insurance Edition, June 1993 at 65.

alter contamination and imposes a requirement that remedial actions meet ARARs, regardless of whether such actions are related to actual risk at a site or will, in fact, be achievable. These requirements, combined with EPA's flawed risk assessment policies and cumbersome procedural requirements, have resulted in the selection of extraordinarily expensive remedies without corresponding benefits, extended delay and expense in the remedy selection process, and, ultimately, Superfund's failure to accomplish its fundamental goal of providing for expeditious protection of human health and the environment.

We have witnessed first hand the problems caused by the flaws in the law and, as mentioned above, we provide in this testimony examples of these problems. We disagree with the suggestions of other parties interested in the implementation of Superfund that the problems cited by industry are simply isolated, anecdotal incidents that do not warrant reform of the law. We also reject any suggestion that these problems arise solely from EPA's failure to implement the law properly. While EPA's implementation of the law has been far from perfect, we are here to tell you that the statutory language must be changed to make the statute work.

1. *Congress Must Provide Statutory Direction to Ensure Accurate Risk Assessments Given that EPA's Longstanding Approach to Risk Assessment Skews the Remedy Selection Process from the Outset -- In Many Cases Preventing Determination of the Actual Risks Posed by a Site.*

Over the decade that has passed since Superfund was enacted, no adequate scientific basis for consistently and accurately assessing the true risks posed by contaminated sites has been established. Indeed, neither the site characterization nor Superfund's remedy selection process is based squarely upon evaluation of actual risks. Instead, decisions are often based on hypothetical scenarios or "potential risks," with site-specific facts rarely forming the basis for evaluating risk.

Until the risks posed by a site are clearly identified, the efficacy and the efficiency of different remediation options cannot be accurately evaluated. EPA's current risk assessment procedures generally require unrealistic assumptions and overly conservative estimates that grossly exaggerate the risk posed by a given site and lead to inappropriate remedy selection.[15/]

The companies have identified several areas in which EPA's risk assessment procedures are flawed, including failure to make reasonable assumptions regarding exposure, toxicity, and risk, failure to use site-specific information choosing to rely instead on default assumptions, failure to use the most recent scientific approaches to risk assessment, and failure to assure the quality and consistency of data. To correct these problems, we recommend that EPA be directed to develop consistent risk assessment procedures that include the following:

15/ Despite the billions of dollars spent on studying and managing NPL sites, critical information is still lacking regarding the extent to which NPL sites pose any real risks. Environmental Epidemiology: Public Health and Hazardous Wastes, National Research Council, National Academy Press p. 9 (1991).

(1) requirements to use realistic exposure scenarios based on current or currently planned land use, reasonable assumptions regarding actual or likely human exposure, and to the maximum extent possible, on actual data, including recognition of and credit for response actions that are completed or planned;

(2) requirements for use of site-specific exposure and pathway information, where available, rather than hypothetical, default assumptions, and use of generally accepted, credible (preferably peer-reviewed) scientific evidence, and methodologies. Moreover, EPA should be required to consider such information, evidence, and methodologies (including new data or reanalysis of older data) whenever submitted by any PRP or other interested person.

(3) requirements to use dose/response assessments that consider weight of the evidence, use realistic error correction factors and correct for potential deficiencies regarding applicability of animal test results to humans, appropriateness of using sensitive animal populations, and limitations of models for low-dose/high-dose extrapolation.

(4) provisions to improve quality control/quality assurance of data submitted to relevant databases (*e.g.*, IRIS, HEAST) by providing for external peer review of all data prior to use and for periodic updating of such databases.

(5) provisions to ensure that adequate consideration is given to the validity, completeness, and reliability of data regarding the site, reasonable assumptions concerning the relationship of the data to human health effects, and the statistical significance of the data.

(6) requirements that Agency for Toxic Substances and Disease Registry ("ATSDR") adhere to EPA's revised risk assessment procedures when conducting human health risk assessments pursuant to CERCLA § 104(i).

The example below is typical of the problems with the unreasonable assumptions currently being used by EPA in the risk assessment process.

EXAMPLE – UNREALISTIC RISK ASSESSMENT ASSUMPTIONS

At one former agricultural chemical formulation and packaging facility, pesticides are in the soil and buried on the site. The site is abandoned and is secured with a chain link fence with the gates locked. Although the remedial investigation indicated that there was no one living on-site and that the nearest resident is up-gradient 250 feet away, the risk assessment conducted by the EPA contractor assumed that an adult and a child were living on-site based on an unsubstantiated report that someone saw a person living on the site at least a few nights a week. This allegation was not investigated and the individual, if that person existed, could have been an employee conducting work during the remedial investigation.

The risk assessment employed the following assumptions with respect to the fictitious adult and child living on the site. The fictitious adult and child are assumed to eat 100 (adult) and 200 (child) mg of surface soil per day for 170 days per year for 30 years. Two surface soil samples and more than 20 subsurface samples (ranging in depth from 3 to 6 feet) were taken and analyzed. The highest value found regardless of surface or subsurface was used to calculate the risk from dermal exposure to surface dust. The calculation of the risk associated with the dust assumed exposure daily. For the fictitious child, it was assumed that for 4 hours per day for 170 days per year for 6 years, 50% of the child's total skin area would be loaded with dust containing chemicals at the highest concentration found, surface or subsurface.

There is a small lake in the area that is contaminated due to activities at another site. It was assumed for both the fictitious adult and child that enough fish were caught to provide the average daily fish intake of 6.5 mg per day for 365 days per year for 30 years. Two fish were actually analyzed from this small shallow lake and the highest level of each chemical found was used to calculate exposure via this route. Both the fictitious adult and child were assumed to swim for 2.6 hours per swimming event in the lake 52 times per year for 30 years. They were assumed to drink 130 ml (1/4 cup) of lake water each time. Further, the child was assumed to have 50% of its body covered by lake sediment during each 2.6 hour swim, while at the same time having 100% of its body surface area covered by lake water.

There were a number of other irrational assumptions made in the risk assessment. These unreasonable exposure assumptions alone would skew the risk assessment to prevent an accurate determination of the true risks to human health, if any, posed by the site.

The two specific areas of inappropriate assumptions regarding future use of contaminated sites and the failure to use site-specific data are discussed in detail below because these problems have become significant obstacles to determining the true risks posed by contaminated sites.

a. Site Use Assumptions

One of the most detrimental aspects of EPA's risk assessment policies is the Agency's consistent assumption that future use of industrial sites will be residential, with the consequent

requirement that such sites meet residential use standards, even when there is no likely prospect that the use of the site will change. As a result, these skewed risk assessment methodologies effectively prevent any realistic assessment of risk.

In his June 23, 1993 testimony before the Subcommittee on Transportation and Hazardous Materials of the House Committee on Energy and Commerce, EPA Deputy Administrator Robert M. Sussman acknowledged the problems with the Agency's risk assessment and remedy selection procedures, particularly those presented by the Agency's land use assumptions. He indicated that EPA *now* recognizes that residential land use is not a likely scenario for all sites and that different land uses would result in different exposure scenarios as well. Mr. Sussman stated that EPA intends to release a policy on this issue in October of this year and that the Agency is currently considering an approach providing that current land use should be assumed to be the future land use unless there is persuasive information that shows that the current land use is likely to change.[16/] In his view, this would ensure that sites that have been used historically for industrial purposes will be examined in light of their current and likely future land uses, which will most likely be assumed to remain industrial.

The companies agree with Deputy Administrator Sussman that EPA should change its risk assessment methodology and are encouraged that environmental participants in the NACEPT process have voiced support for remedy selection based on realistic land use assumptions. As discussed above, however, we believe that EPA needs to implement a wide range of changes to the risk assessment process. We believe that the *statute* must be changed to direct and provide support for EPA implementation of all of these changes to the risk assessment process -- and to ensure that they are adopted.

EXAMPLE – INAPPROPRIATE ASSUMPTIONS REGARDING LAND USE

At one site at which GE is involved, all nearby residents use city water and it is not reasonably anticipated that the groundwater would be used as a drinking water source in the future. Even though the site is fenced and covered, and poses no risk to human health or the environment, EPA's selected remedy requires, among other things, incinerating approximately 60,000 cubic yards of soil and extensive groundwater remediation. The total projected costs for 1.5 acres is greater than $20 million. This remedy is premised on future residential use of the site including drilling of drinking water well, which as mentioned above is neither a current nor a currently planned use of the site.

16/ The companies believe that early community involvement in the remedy selection process is essential to the success of Superfund. Specifically, communities must be involved in making land use decisions for sites that will serve as the basis for the risk assessment and remedy selection process. The companies are actively seeking the views of State and local representatives on these issues.

b. Site-Specific Data

Under the current system, EPA consistently ignores or discounts site-specific data on exposure and risk, placing a disproportionate emphasis on potential exposures and risks. It is critical that EPA rely on all available data regarding a site in developing the risk assessment, and that it discard any artificial assumptions based on worst-case scenarios whenever site data can reasonably be obtained. With respect to soil standards, which are often developed by EPA because there is no ARAR, the Agency continually fails to consider the site-specific data on porosity, leachability, or actual impact, relying instead on posited values of the various manuals and models for assessing potential exposures and risk (even though such potential exposures are often highly unlikely to occur).[17/]

17/ Elizabeth H. Temkin, Cleaning Up ARARs: Reflections from the Field, Natural Resources and Environment, Winter 1992 at 18.

EXAMPLE – FAILURE TO USE SITE-SPECIFIC DATA IN RISK ASSESSMENT AND THE IMPORTANCE OF COMMUNITY INVOLVEMENT

When EPA began work at the Smuggler Mountain Superfund Site (a former mining site), located in Aspen, Colorado, in 1985, response standards were primarily set by policy. Testing of the residential soils in Aspen showed a few pockets of high lead concentration that exceeded EPA's arbitrary action levels which were set by policy rather than by risk assessment. EPA, therefore, proposed a massive soil removal program, at one point proposing removal and replacement of as much as two feet of topsoil throughout the affected neighborhoods. In 1991, a blood screening study, conducted by the Colorado Department of Health with funding and oversight from the Agency for Toxic Substances and Disease Registry (ATSDR), showed that children's blood lead levels in Aspen were nearly three times lower than the national average and four times below the level Center for Disease Control considers to be of concern for young children. Finally, lead bioavailability studies demonstrate that lead exists in a number of forms – some of which are readily absorbed by humans (*i.e.*, are bioavailable) and some of which are not. Studies of the lead in the Smuggler wastes indicate that it is of the type *not* readily absorbed, yet EPA's risk assessment assumed that all the lead was bioavailable.

Given the results of the study, the community of Aspen questioned the need for massive removal of residential soils as proposed by EPA. The community was justifiably concerned that the preference for permanence (which drove the selection of EPA's preferred remedy) would cause the lead to become airborne and pose a threat to human health significantly greater than any threat posed by leaving the soil in place. In response to growing public criticism, EPA developed a rather elaborate mechanism to justify what was clearly an appropriate departure, in terms of protecting human health and the environment, from the preference for permanent remedies and the default, overly conservative assumptions made in selecting the remedy.

EPA agreed to use a Technical Advisory Committee (TAC) made up of six independent experts to evaluate the site. The TAC concluded that the lead in the soil presented no current threat to human health and the environment and that the potential for a future threat was small. The TAC thus recommended a much less disruptive remedy and EPA has just recently agreed to revise its plan to follow the TAC recommendations. No soil removal will occur although a small area of exposed mining waste will be covered with topsoil and revegetated. While the ultimate result in this example is appropriate, the difficulty in reaching it cannot be justified.

2. *The Statute's Preference for Permanence and Treatment-Based Remedies Drives Selection of More Costly Remedies that Do Not Enhance Protection of Human Health and the Environment.*

Section 121 of CERCLA requires EPA to give preference to treatment-based permanent remedies.[18/] This preference inappropriately limits consideration of institutional and

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18/ The statute defines "permanent" remedies as those that reduce the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants, CERCLA § 121(b), rather than in terms of its traditional meaning (continued...)

engineering control options,[19] even though these control options often are able to achieve the statutory goals more quickly and in a more cost-effective manner than treatment. Indeed, in some cases institutional and engineering controls are *more* protective of human health and the environment than treatment because treatment and destruction activities may increase risks through mobilizing and releasing previously stabilized hazardous constituents into the environment.[20]

Moreover, recent studies clearly indicate that the preference for treatment is a primary cause of the excessive costs and delays inherent in the Superfund program. For example, the CBO estimates that Superfund appropriations could be reduced by more than $2 billion over five years (and outlays cut by $1.25 billion) by eliminating the preference for treatment-based remedies.[21] The CBO report states that "a *judicious* shift toward these interim measures could reduce remediation costs by 40%, *without sacrificing health or environmental protection*," and notes that indirect benefits of such a shift include reduction of "federal expenditures on enforcement as well as on direct cleanup, since it would decrease the incentive for private parties to contest their hazardous waste liabilities."[22]

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[18](...continued)
of "continuing or enduring without fundamental or marked change; stable, lasting." Webster's Ninth New Collegiate Dictionary 876 (1990). In other words, the statute's definition of permanent remedies actually means "treatment for treatment's sake," instead of ensuring that remedies be effective in the long term for the purpose of protecting human health and the environment, consistent with the traditional definition of "permanent." The Proposal eliminates the current flawed definition so that there will be no confusion that containment or other such remedies should be considered on an equal footing with treatment.

[19] The statute provides an exception to the treatment or permanence preferences when they are not technically feasible. CERCLA § 121(d)(4). In addition, a PRP may obtain a waiver from the ARARs requirement. As with any administrative process, however, attempting to justify an exception or to sustain a waiver is necessarily more difficult than selecting the preferred or nominally required approach. Thus, exceptions and waivers are extremely difficult, expensive, and time consuming to obtain.

[20] For example, when incineration is the treatment option, air emissions from the incinerator may, in some cases, pose a higher degree of risk than using containment to prevent exposure at the site. In addition, in one of the few cases where EPA's remedy decision has actually been reviewed by a court, the court rejected EPA's plan because of the threat posed by excavating drums of chemicals. United States v. Hardage, 750 F. Supp. 1460 (W.D. Okla. 1990), rev'd on other grounds, 982 F.2d 1436 (10th Cir. 1992).

[21] Congressional Budget Office, Reducing the Deficit: Spending and Revenue Options 155 (Feb. 1993).

[22] Id. (emphasis added).

EXAMPLE – PROBLEMS WITH THE PREFERENCE FOR TREATMENT AND PERMANENT REMEDIES

The Douglassville Disposal site is a 50-acre site located along the southern bank of the Schuylkill River in Union Township, Berks County, Pennsylvania. The site consists of 10 source areas that have been impacted by the waste oil and solvent recycling processes that have been conducted on the property from 1941 through 1985. The site is located in a rural area consisting of cropland, uncultivated fields, and light industrial and residential development. The primary exposure pathways on the site were associated with direct contact with impacted soil, accidental ingestion of impacted soil, and inhalation of fugitive dust from the site.

The ROD selected a treatment remedy involving excavation and thermal treatment of approximately 48,400 cubic yards of waste from 1 of the 10 source areas and removal and thermal treatment of an additional 600 cubic yards of sediment from an on-site ditch. In addition, 3 source areas would be covered with 1 foot of flyash and 2 feet of vegetated topsoil. Three source areas would be revegetated and covered with 1 foot of topsoil, and the 3 remaining source areas would be subject to no action. The cost of the thermal treatment remedy was estimated at $39.3 to $53.6 million depending on the need for stabilization of the incinerator ash. Of this, approximately 21.4 million would be required for the incineration of 49,000 cubic yards without stabilizing the ash. Implementation was estimated at 2 to 3 years.

The containment option consisted of a multiple-layer RCRA cap over all 10 of the source areas of concern. The extent of the multiple-layer cap was unusual due to the selection of a final remedy with no action or some form of limited cover in all but a single 2.3 acre source area. The treatment remedy was selected even though the ROD states that the proposed containment option would be protective in that it would remove risks posed to humans by direct contact, ingestion, and inhalation. EPA also stated that the containment option would mitigate migration of surface soil contaminants. The cost of this remedy would be $8.2 million. The incineration option was chosen to meet the preference for treatment and permanence.

Note that a more realistic cost comparison would be between the $2.2 million cost of a single layer cap over the single source area of concern with the $21.4 million cost of incineration -- a nearly 10-fold increase.

EPA has acknowledged in several cases that use of institutional and engineering controls can be protective of human health and the environment and, where no treatment option exists, has in some cases selected such remedies. Unfortunately, where treatment alternatives do exist, EPA feels compelled by the statutory preference for treatment to apply that remedy even where

the costs of treatment far outweigh the incremental benefits in terms of human health and environmental protection.[23/]

EXAMPLE -- PROBLEMS WITH THE PREFERENCE FOR TREATMENT AND RESULTING DELAY IN REMEDY IMPLEMENTATION

At the McColl Site in Fullerton, California, the site constituents are spent acid wastes from the production of aviation gasoline in support of the United States' World War II effort. The site is located immediately adjacent to a residential community. Core analyses indicate no groundwater contamination. In December 1980, EPA requested waste disposal information from the PRPs. In December 1982, the site was added to the NPL.

The low acidity, high sulfur McColl wastes present a very low risk to human health and the environment, based on EPA's risk analyses, which are typically conservative. Capping the waste site to eliminate exposure at a cost of approximately $20 million addresses all risk issues but does not meet the statutory preference for treatment. The preference for treatment ultimately led EPA to require excavation and treatment at a cost of $200 million.

Excavation of the McColl wastes was halted by the courts in 1985 because of the lack of a secondary disposal site and the lack of demonstration that the resultant emissions could be controlled. After 10 years, the site has yet to be completed.

Instead of creating artificial preferences for permanence and treatment, the remedy selection process should focus on a remedy's ability to be effective, managing risk in the long term. If a containment or other option satisfies this test, it should be available for selection, even where treatment options are also available. For example, the companies believe that management and institutional controls, such as deed or use restrictions are appropriate remedial remedies where the property will continue to be used for industrial purposes. In addition, on-site remedies such as stabilization should not be discouraged in these situations. Not only will these remedies in most instances cost-effectively minimize any quantifiable risk, but ongoing monitoring will detect any risks requiring further long-term efforts. In short, achieving the current or currently planned use of a site should be the basis for determining what types of remedies will be protective and how to manage risk in the long term.

Given that our society has both limited resources and a wide range of social and environmental problems to address, resources should be allocated in way that attains the most significant benefits for the public health and welfare for *each dollar spent.* Superfund's

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23/ A recent study at the University of Maryland indicated that if a PCB site contained 100,000 cubic yards of contaminated soil, EPA would be willing to spend (or have PRPs spend) $36 million (1987 dollars) more to incinerate the soil than cap it. Shreekant Gupta et al., Cleanup Decisions Under Superfund: Do Benefits and Costs Matter?, Resources 13 (Spring 1993). We note also that EPA has often required treatment-based remedies even when it has been clear that treatment would either not be technically feasible or would not achieve a requirement the Agency determined to be an ARAR.

preference for treatment-based permanent remedies provides an excellent example of a statutory provision that requires society to invest hundreds of millions of dollars at little or no return. Eliminating the preference for treatment-based permanent remedies will help to achieve protection of human health and the environment in the most cost-effective manner and will create incentives for PRPs to come forward and address sites, reduce the incentives for litigation created by the preference, and thereby provide resources to address additional sites and other environmental and health problems facing our society. In addition, by allowing our dollars to be as productive as possible, we can invest more in new pollution control technologies, research and development for new products, and environmental and public health purposes.

3. *The Statute's Mandate that Remedial Actions Meet ARARs Disregards Whether Application of Such Requirements Is Needed to Achieve Protection of Human Health and the Environment, and EPA's Implementation Fails to Consider Whether ARARs Are in Fact Achievable.*

The statute requires that remedial actions meet applicable or relevant and appropriate requirements of other environmental laws, or "ARARs." The ARARs requirement means that the remedy selected must meet very stringent standards that have been developed under other laws to address circumstances and promote objectives that may be different or even inconsistent from Superfund's objectives.

The ARARs requirement is inappropriate because it mechanically imports and applies standards and requirements from other environmental programs, even if those requirements were not devised with remediation in mind and are technically or practically inappropriate.[24/] The ARARs requirements apply regardless of the use or planned use of the property or whether ARARs are achievable. The primary argument advanced in favor of ARARs is that applying such requirements will achieve consistency at sites throughout the country. In practical application, however, this consistency can only be achieved if all sites are alike or can be grouped into categories in terms of the environmental problems being addressed and the current or currently planned uses of a site. While, as discussed below with respect to demonstrated control measures, patterns are beginning to emerge on types of sites and corresponding response

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[24/] For example, the "blind" application of RCRA's prospective hazardous waste management standards designed for active operating facilities to Superfund cleanups unnecessarily drives up costs. Hazardous waste management regulations ultimately designed to prevent the mismanagement of currently generated process wastes are not well-suited to the remediation of historical contamination. For instance, RCRA's "mixture" and "derived-from" rules have transformed vast quantities of low-toxicity/high volume soils into hazardous waste, without regard for the actual risks posed by those materials. In addition, RCRA's land disposal treatment requirements, whose application does not make sense where the object of the remedial activity is already in the ground, prevent efficient waste management.

Another example is the consistent application of maximum contaminant levels ("MCLs") drinking water standards as an ARAR at most sites with groundwater even if the groundwater is not currently being used and is not planned to be used as drinking water.

activities, the environmental impacts or threats driving cleanup as a factual, scientific matter vary widely with geography and demographics.[25/]

EXAMPLE – PROBLEMS WITH THE REQUIREMENT TO MEET ARARS AND UNREASONABLE ASSUMPTIONS REGARDING SITE USE

A natural gas plant and several other industrial facilities at a site together comprise the sources of primary concern to EPA within a particular Superfund site. Downgradient from the site lies a relatively new subdivision. Each home has its own water supply well. Absent the Superfund-related impacts, groundwater arguably is drinkable, although the quality is poor. When groundwater contamination at the site was first documented, EPA undertook to install a public water supply system which has since been completed. The gas plant initiated a removal action (groundwater pump-and-treat and soil vapor extraction) and took other steps early in the Superfund process to limit the prospective impact of its operations, particularly off-site. As a result of these steps combined with natural biodegradation, groundwater just downgradient of the plant site met the selected ARAR, the relevant drinking water standard (*i.e.*, maximum contaminant level ("MCL")).

In light of prior experience, the gas plant PRP did not even try to argue that compliance with MCLs should be measured at the water tap instead of the property boundary. Nor did it argue that installation of the alternative water supply system made compliance with MCLs redundant. Instead, the PRP argued a more conservative point that as long as the groundwater exiting the plantsite met MCLs, and the land use remained industrial, no additional remedial action for either on-site groundwater or soil should be required. The PRP, a longstanding regional presence and a stable company, was willing to commit and provide the necessary financial assurances that if MCLs were exceeded in the future off-site (an extensive monitoring plan was also offered) or if the facility was ever abandoned, then the on-site remediation to meet MCLs would be performed. The PRP also suggested deed restrictions and possible county regulation regarding on-site drilling.

Nonetheless, EPA required MCLs to be met on-site based on blind application of ARARs, permanence requirements, and a risk assessment based on the assumption that someday someone would rip out the tons of piping and other gas plant hardware and build a residential subdivision on the property.

From Temkin, supra note 17 at 18.

Not only is the ARARs requirement irrational in itself, but EPA has exacerbated the problem by interpreting the requirement in a very complex and cumbersome way. EPA has developed hundreds of pages of instructions, leading to an exceedingly costly and time-

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25/ Temkin, supra note 17 at 18-19.

consuming ARARs evaluation for each site. In its October 1990 *Catalog of Superfund Publications*, EPA lists 26 different documents addressing ARARs.[25/]

Moreover, obtaining a waiver from the ARARs requirement is extremely difficult. EPA consistently requires use of expensive treatment remedies when it is clear that the technology will not achieve the designated ARAR. As with any administrative process, attempting to justify an exception or to sustain a waiver is necessarily more difficult than selecting the preferred or nominally required approach. Thus, waivers are extremely difficult, expensive, and time consuming to obtain. Indeed, EPA has typically indicated that it will not grant a waiver until the PRP implements a technology and demonstrates its failure to achieve the standard. Clearly, this approach limits the usefulness of the waiver process since the PRP is required to implement the remedy from which it is seeking a waiver.

EXAMPLE -- PROBLEMS WITH THE REQUIREMENT TO MEET ARARS AND THE PREFERENCE FOR TREATMENT

ARCO's experience with groundwater remediation at the Wellsville site demonstrates how ARARs and the preference for treatment can require selection of a remedy that disregards risk analysis, land and water use, technical feasibility, and cost-effectiveness. EPA's studies at Wellsville indicated that the relatively small amount of contamination found in the ground water posed no significant risk to human health or the environment, in part because the groundwater was not currently or likely to be used as drinking water.

Nonetheless, based on the ARARs requirement, EPA identified drinking water quality standards (1 part per billion for benzene) as the goal for the remediation at the site and selected an extraction and treatment remedy. EPA indicated that the remedy was justified because *some* benzene would be recovered and the water would, therefore, be "cleaner" even though the drinking water standards could not be technologically achieved. EPA rejected a fully protective remedial option based on downstream monitoring of the Genessee River and controlled access to the groundwater. The treatment-based remedy that EPA selected had a present worth cost that was *nine times* the cost of the equally protective remedy based on controlled access and monitoring. ARCO sought a waiver from the ARAR, which was denied by the Agency.

25/ The ARARs requirement also results in the use of more stringent State standards, which often have not undergone adequate scientific review or are set at levels lower than actual "background" concentrations. The use of such standards adds greatly to the time and cost of remedial studies. Compounding the problem from an administrative standpoint is that States frequently fail to identify what they consider to be ARARs until just before EPA is to select a remedy.

4. *The Remedy Selection Process Is Too Slow and Significantly Delays Actions to Protect Human Health and the Environment.*

The statute's conflicting directives have also produced extremely inefficient and costly investigative and remedy selection procedures. Each site is mechanically subjected to a long series of detailed, lengthy, and costly investigations, regardless of the specific conditions or risks at a site. Don Clay, former Assistant Administrator of EPA's Office of Solid Waste and Emergency Response, observed (when in that post) that large amounts of time and money are expended as people from various elements of the program go out to "feel a different part of the elephant" at Superfund sites. Mr. Clay suggested that more efficient procedures could cut years off the assessment process.

More importantly, the assessment process as currently configured still does not produce scientifically-sound evaluations of actual risks to human health or the environment. These shortcomings are exacerbated by EPA's "9-criteria" approach for remedy selection.[27/] These criteria are complex, vague, and costly to implement. Often, any number of these criteria are irrelevant at a particular site, but EPA nonetheless requires companies to go through the motions, resulting in a significant expenditure of money and time. For example, during the feasibility study stage, EPA procedures require that a wide range of remedial options be evaluated, including cost estimates, even when it is apparent that only two or three options have merit.

EPA micromanagement of PRPs also results in significant delay and waste of resources. Currently, EPA replicates the PRP's planning and design work at each incremental stage of the process, during which time no new work may be done. Sometimes it takes EPA longer to review a document or plan than it took for the PRP to prepare it. Technical project teams are

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27/ In March 1987, EPA released guidance proposing the use of 9 criteria to guide the remedy selection process. These criteria were then codified in the draft revised National Oil and Hazardous Substances Pollution Contingency Plan (the "NCP") at 40 CFR part 300. The criteria are:

Threshold criteria that must be satisfied for a remedy to be eligible for selection --
1. Overall protection of human health and the environment.
2. Compliance with ARARs.

Primary balancing criteria that are used to help selection alternative from the full range of potential remedies meeting the threshold criteria --
3. Long-term effectiveness and permanence.
4. Reduction of toxicity, mobility, or volume through treatment.
5. Short-term effectiveness.
6. Implementability.
7. Cost.

Modifying criteria that are considered after a remedial action has been formally proposal for public comment and based upon which EPA reserves the right to change the remedy --
8. State acceptance.
9. Community acceptance.

sometimes forced to dissolve due to delays in EPA reviews. Moreover, changes in EPA personnel are frequent, requiring companies to repeat completed work and reeducate the agency. This redundant, expensive, and time-consuming level of oversight should be eliminated. Instead, EPA should review the PRP's plans and actions at critical decision points and when the remedial action has been completed.

EXAMPLE – DELAY IN REMEDY SELECTION

Two very similar sites in terms of necessary remediation efforts are found at Sand Springs, near Tulsa, Oklahoma and Vinita, Oklahoma (a small town in the northeastern part of the state). The Sand Springs site is an NPL site, while the contamination at the Vinita site is being addressed under State law. The investigation at the Vinita site began in 1989 and remediation was completed within three years for a cost of $6 million. Investigation of the Sand Springs site began in 1985 and remediation of the refinery wastes on the site is schedule to begin in late 1993 with completion in 1996, nearly 11 years after the start of the remedial investigations. Costs for the Sand Springs site are forecast at $65 million.

Although remedies selected for these sites were ultimately the same, the NPL site will take at least 8 years longer to remediate than the similar State site. There were a variety of reasons for the increased time and cost, including the initial selection of certain inappropriate treatment-based remedies. For example, EPA spent a longer time reviewing the PRP's design than the PRP took to prepare them and the requirement for design review at the 30%, 60%, and 90% completion points required continual stoppage of the design process while awaiting EPA comments on previous submittals. Finally, although Sand Springs is a larger site and other factors contributed to the high cost, it is significant that oversight costs at Sand Springs will approach $6 million – the total cost of remediation at Vinita.

B. *Congress Must Address the Ineffectiveness of the Superfund Program by Enacting Legislative Reforms.*

As mentioned above, EPA has recently initiated an effort to institute certain administrative reforms to implement the Superfund program. While these steps may be helpful in removing some of the procedural obstacles in the program, the core problems with Superfund are found in the statute itself. Congress must act to (1) eliminate the preference for treatment-based permanent remedies; (2) eliminate the requirement to apply ARARS; (3) establish clear and workable health and environmental standards under Superfund which require that cost-effective remedies that have been proven effective in practice be selected based on realistic risk assessment and assumptions regarding use of the site using all available site-specific data; and (4) ensure expeditious remedy selection and implementation. We offer our Proposal, presented below, as a blueprint for removing the statutory obstacles to an effective Superfund program. We believe that adoption of this approach to remedy selection will better enable EPA, the States, and PRPs to work together to achieve the fundamental goal of the statute.

II. The Proposal for Superfund Remedy Selection Reform Cures the Flaws in the Statute so as to Better Promote Superfund's Fundamental Goal.

The companies' Proposal for Superfund Remedy Selection Reform is briefly summarized below. The most important aspects of the Proposal are (1) the establishment of independent standards for protection of human health and the environment, eliminating the need for EPA to go outside of Superfund to determine what actions are sufficiently protective and (2) the development of a two-phase process for addressing individual sites. Consistent with Superfund's focus on protecting health, the Proposal requires the program first to focus on protecting human health by targeting and quickly reducing any real risk posed by site conditions, and second to ensure appropriate environmental protection in a way that does not delay actions to reduce immediate threats to human health.

The Proposal establishes a two-phase process for selecting appropriate remedial actions at sites listed on the NPL. The Phase I remedial action would be required to ensure that the health standard is met. Any additional actions needed to protect the environment are to be implemented in Phase II. Although the phases are designed to be implemented sequentially, the second phase may be accelerated by the PRP voluntarily, or by the Administrator when a severe environmental problem is identified. Once both of these standards have been met, the Administrator must remove sites from the NPL.

The Phase I process will require a baseline risk assessment (which takes into account all response actions previously conducted or ongoing at the site) to determine the risk posed to human health based on current and currently planned use of the site and using reasonable site-specific exposure and risk assumptions. Phase I remedies must expeditiously reduce cancer risk to the range of $1x10^{-4}$ to $1x10^{-6}$ and for threshold pollutants, to a level that is likely to be without an appreciable risk of deleterious effects for the exposed population. The technically practicable remedy that achieves the standard most cost-effectively must be selected. The Proposal is designed to ensure that the health and safety of those living near the sites are addressed immediately, whereas longer term needs are addressed subsequently.

In Phase II, additional remedial action is taken to protect the environment to the extent necessary to allow the current or currently planned use of the site, and the area affected adversely by the release of hazardous substances from the site, where the incremental benefits exceed the incremental costs of such remedial action. In considering the process for Phase II remedy selection, it should be recognized that steps will have to be taken to assure that there are no inconsistencies between this process and the law's requirements to respond to natural resource damages.[28/]

28/ The companies are currently preparing a separate proposal addressing natural resource damages.

A. *The Proposal Establishes Meaningful and Workable Standards for Protection of Human Health and the Environment.*

The Proposal establishes clear standards for the protection of human health and the environment that must be met at every site through remedial actions that are developed based on sound risk assessments. The standards are to be evaluated using the best available site data and realistic, reasonable assumptions regarding exposure and risk, specifically considering the current and planned uses of the site. The Proposal does not rely on ARARs established under other (non-remedial) environmental programs and does not prejudge the validity of any type of control measure that might be effective at a given site.

1. *Protection of Human Health.*

The Proposal eliminates the preference for treatment-based permanent remedies and the reliance on other statutory and regulatory requirements (*i.e.*, ARARs) under current law and articulates a standard that would be applied under CERCLA to identify the level of protection for human health that remedial actions must meet. The Proposal establishes health-based standards for carcinogenic and non-carcinogenic hazardous substances. For carcinogens, remedial actions must reduce cancer risk to a range of $1x10^{-4}$ to $1x10^{-6}$ based on current or currently planned use of the site and using reasonable site-specific risk assumptions. For non-carcinogens, the Administrator must require remedial actions that reduce risk to a level that is likely to be without an appreciable risk of deleterious effects for the exposed population,[29/] based on current or currently planned use of the site and using reasonable site-specific risk assumptions. The Proposal requires that the most cost-effective alternative that achieves the health standards be selected and that evaluation of whether the standard is met be consistent with the new risk assessment procedures.

2. *Protection of the Environment.*

The Proposal takes a different approach to the environmental protection standard under current law. It requires additional remedial action to protect the environment to the extent necessary to allow the current or currently planned use of the site and the area affected adversely by the release of hazardous substances from the site where the incremental benefits exceed the incremental costs of such remedial actions. Again, any evaluation of the standard must be conducted in accordance with the new risk assessment procedures.

[29/] This standard is analogous to the standard used to determine levels of concern for threshold pollutants (*i.e.*, reference dose concentrations). See, e.g., Notice, Environmental Protection Agency, Draft Report: Principles of Neurotoxicity Risk Assessment, 58 Fed. Reg. 41556 (1993); Proposed Rule, Environmental Protection Agency, 40 CFR Parts 122, 123, 131, and 132, Proposed Water Quality Guidance for the Great Lakes System, 58 Fed. Reg. 20802 (1993).

3. *Requirement that Remedies Be Proven Effective in Practice and Technically Practicable and Elimination of the Preference for Treatment-Based Permanent Remedies and the Requirement to Meet ARARs.*

Under current law, EPA is to give a preference to selection of innovative technologies, which can lead to imposition of remedies for which there is no reasonable expectation that the applicable standard will be met. The Proposal requires remedies to be proven effective in practice and technically practicable, although the PRP(s) may elect to employ innovative remedial actions that have not yet been proven effective in practice.

In addition, consistent with eliminating the preference for treatment and permanence, if effective institutional and standard engineering controls achieve the standard, they are to be considered on an equal footing with other options. The standard does not create any preference for restoration of environmental attributes to pre-release levels.

B. ***The Proposal Requires EPA to Develop and Implement Revised Risk Assessment Procedures.***

To correct the long-standing problems with the risk assessment process used under Superfund, the Proposal requires EPA to establish by rule improved risk assessment procedures not later than 6 months after the date of enactment. The revised risk assessment procedures, which are discussed in more detail on page 7 above, will include the following: use of realistic exposure scenarios based on current or planned land use, reasonable assumptions regarding actual or likely human exposure, and to the maximum extent possible, actual data; credit for completed or planned response actions; site-specific exposure and pathway information; credible dose/response assessments; improved quality control/quality assurance; and other specified considerations.

C. ***The Proposal Provides for a More Streamlined Process and Will Result in Less PRP Resistance to the Remedy Selected and Speed Remedial Actions that Protect Human Health and the Environment.***

The two-phase approach to remedy selection marks a significant departure from current law which contemplates that a single Record of Decision will be issued addressing both human health and environmental protection. The mechanism for implementing the new remedy selection process is a Remedial Action Plan or "RAP," which will replace the RI/FS and proposed plan under the current system. The procedures for adoption of the RAP are intended to be conducted expeditiously while also providing adequate opportunities for public participation in the remedy selection process.

1. *The Proposal's Two-Phase Process for Selecting Remedial Actions to Meet the Health and Environmental Standards Streamlines the Process Significantly.*

a. Phase I

Selection of the Phase I remedial action is based on a remedial action plan ("RAP"). The RAP will provide for a remedial action in accordance with section 121(a), and will include (1) a site characterization, (2) a baseline risk assessment (which takes into account all response actions completed or planned at the site), (3) a description of the remedial action to be taken (including community participation), and (4) a reasonable schedule for conducting the remedial action, taking into consideration site-specific factors (including, but not limited to, seasonal climatic conditions, the complexity of the plan, the ability to obtain access to the site), and the availability of technology and other goods and services needed to conduct the remedial action.

Within 12 months after a site is listed on the NPL (or 12 months after the date of enactment for currently listed sites), a PRP may notify the Administrator of its intent to prepare a RAP. The notification may include any currently known data regarding the site. If no PRP notifies the Administrator of an intent to prepare a RAP, the Administrator must prepare one. Only one RAP may be prepared for each operable unit at a site, and coordination of RAP preparation at multi-party sites is the responsibility of interested PRPs.

The preparation and submittal of the proposed RAP must be completed within 9 months after the PRP(s) submit a notice of intent, subject to case-by-case extensions under appropriate circumstances. If no PRP prepares a RAP, the Administrator must complete a proposed RAP. RAPs are to be subject to notice and comment procedures and must be approved or disapproved within 6 months of receipt.

The Proposal provides for modification of RAPs as they are being implemented, with minor modifications being accomplished by submittal of a notice and major modifications being subject to a 30-day approval period. The Proposal requires PRP(s) responsible for implementation of the RAP to submit to the Administrator periodic progress reports setting forth the current status of implementation of the remedial action. The Administrator is given appropriate enforcement authority in the event that the PRP has significantly deviated from the RAP.

b. Phase II

For Phase II remedial actions, the Administrator must initiate a proceeding to determine whether additional remedial action is needed to meet the environmental standard within 1 year after completion of all steps in the Phase I RAP (excluding ongoing operation and maintenance). If EPA determines that additional remedial actions are required to meet the environmental standard, it must notify the PRP(s) and a Phase II RAP must be prepared and implemented according to the same procedures as for a Phase I RAP. A final determination regarding the need for Phase II action must be made within 5 years after commencement of the proceeding.

The Proposal also allows Phase II to be accelerated at the option of the PRP(s). EPA may require acceleration of Phase II if, after notice and comment, EPA determines that (1) failure to accelerate Phase II will result in an immediate and significant threat of serious, widespread and irreparable harm to the environment, (2) acceleration of Phase II is likely to prevent or significantly mitigate such threat, and (3) an accelerated Phase II remedial action will be consistent with implementation of the Phase I remedial action.

Any affected party who participated in the remedy selection process may obtain judicial review of a Phase II RAP regarding the legality of the agency's decision, provided that any issues raised were also raised during the process. Judicial review at this stage does not slow cleanups, but rather provides an important check on EPA's decisionmaking process and affords those funding the remedial action an opportunity to ensure that their due process rights are protected. A decision by the Administrator to accelerate Phase II is likewise appealable at this time. Implementation of a Phase II RAP is to be stayed pending resolution of the court review.

2. *The Proposal Requires EPA to Establish Demonstrated Control Measures.*

The Proposal also recognizes that although each site presents its own unique set of circumstances, there are many site types that are commonly encountered and well understood (*e.g.*, wood treatment facilities, municipal landfills). The problems encountered at these sites are similar; the solutions are well understood. For these sites, it is a waste of both time and money to go through a lengthy and complex decisionmaking process to reach a result that is obvious based on past experience. Therefore, the Proposal provides for an alternative path under which the PRP(s) may implement control measures that have been demonstrated to be cost-effective and technically practicable remediation methods. Implementation of these demonstrated control measures ("DCMs") will be a presumptively acceptable remedy.

The Proposal requires that, within 12 months after the date of enactment, EPA promulgate by rule control measures that have been demonstrated to be cost-effective and technically practicable remedial actions at generic site types (*i.e.*, types of sites that are commonly encountered and have well understood contamination problems). DCMs will be differentiated according to land use (*i.e.*, residential, industrial) and environmental media. As appropriate, different DCMs may be established for the health standard and the environmental standard. Significantly, DCMs are not limited to treatment measures, but are to include institutional and standard engineering controls as well.

If the PRP(s) elect to implement a DCM-based remedial action, the RAP will include an engineering evaluation to select the appropriate DCM for the site. The RAP will not include a risk assessment, but will instead contain an engineering evaluation to ensure that the DCM will be adequate to achieve the standard at the site. A full risk assessment is not needed because DCMs, by definition, have been demonstrated to be effective remedial actions at similar sites. In other respects, the selection and implementation of a DCM-based RAP follows the same procedures as apply to other RAPs.

Importantly, DCMs are not presumptive measures required for cleanup. In other words, there is no presumption that a remedial action must use a DCM. However, if a PRP follows the procedures for implementing a DCM-based RAP, completion of the DCM will be sufficient to meet the standard at the site.

CONCLUSION

The Proposal represents a better way to achieve Superfund's fundamental goal -- protection of human health and the environment through expeditious reduction of actual, significant risks posed by contaminated sites in the most cost-effective manner possible. It is based on thirteen years of experience under Superfund -- experience that has taught us many ways to do things right, as well as mistakes that we should not repeat.

The companies are convinced that the generally recognized problems with the current Superfund remedy selection process -- excessive costs and delay in protecting human health and the environment through delayed cleanups -- result primarily from flaws in the statute. Accordingly, the companies believe that *Congress* must act to correct these flaws by adopting the legislative changes contained in the Proposal we have presented today. Specifically, Congress must act to (1) eliminate the preference for treatment-based permanent remedies; (2) eliminate the requirement to apply ARARs; (3) establish clear and workable health and environmental standards under Superfund which require that cost-effective remedies that have been proven effective in practice be selected based on realistic risk assessments and assumptions regarding use of the site using all available site-specific data; and (4) ensure expeditious remedy selection and implementation.

If the Proposal were adopted, the companies are confident that the following benefits would result:

- More remedial actions would be undertaken and completed in a faster time frame.
- The costs of remedial actions would be substantially reduced, while still ensuring protection of human health and the environment.
- The public's confidence in the Superfund program overall, and community acceptance with respect to individual site remedies, would be enhanced because a realistic identification of risks posed by a site would be provided and those risks would be expeditiously abated.
- The nation's productive capacity would be enhanced because resources would be allocated in a more cost-effective manner.

We also fully expect that implementation of the Proposal would provide opportunities for revitalization of industrialized, urban areas to allow for future economic growth.

ARCO, GE, Monsanto, and WMX thank the Subcommittee for the opportunity to present their views on reform of the Superfund remedy selection process and for considering this Proposal as a basis for future congressional action on remedy selection. Finally, we look forward to addressing the Subcommittee on other aspects of the current Superfund program in need of reform, including the liability scheme, Federal and State involvement in Superfund, and natural resource damages issues.

SUPERFUND REAUTHORIZATION

THURSDAY, SEPTEMBER 30, 1993

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON SUPERFUND, RECYCLING, AND
SOLID WASTE MANAGEMENT,
Washington, DC.

CLEANUP PROCESS AND INNOVATIVE CLEANUP TECHNOLOGIES

The subcommittee met, pursuant to notice, at 10:07 a.m. in room SD-406, Dirksen Senate Office Building, Hon. Frank R. Lautenberg [chairman of the subcommittee] presiding.

Present: Senators Lautenberg and Smith.

OPENING STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator LAUTENBERG. We will call this hearing of the Subcommittee on Superfund, Recycling and Solid Waste Management to order.

Today, we will continue our hearings on Superfund reauthorization by finishing our look at the cleanup process and considering how to develop better technologies for cleaning up toxic wastes. One of the key steps in the cleanup process is conducting risk assessment because some people believe that EPA adopts a worst case scenario in conducting the risk assessment and unnecessarily increases the cost of cleanup as a result.

I asked GAO to look into the way that EPA does its work and I'm pleased to announce today the release of the GAO report. The findings of that report indicate that EPA has typically adopted reasonable and moderate, not unduly conservative assumptions when it estimates risks posed by these sites. There may be instances here or there where EPA has either underestimated or overestimated the risks posed by these sites, but GAO tells us that as a whole, the agency has adopted assumptions and an overall process that is the mainstream of scientific thinking.

Our first panel will look at the issue in further detail and from a variety of perspectives. In addition, I've asked them to address some of the less technical but critical issues associated with the remedy selection—whether future land use should be considered to a greater extent in deciding how much to clean up a site, the cost effectiveness of Superfund cleanup and the role of permanence and treatment in selecting remedies.

The second panel will deal with an area in which I am particularly interested, the development of innovative technology to treat

contaminated sites. Earlier this year, I introduced a bill, S. 979, to promote the development of innovative technologies and encouraged us to try to export those products to other countries. Creating those kinds of technologies can produce two very desirable results. First, they can help us more fully protect human health and the environment at lower costs. Second, the development of new technologies can also be a factor in job creation. Many of the problems associated with the Superfund program right now, cost and delay to name the two big ones, can be significantly reduced by successful development of new techniques for getting rid of the contamination of these sites.

As we will hear from our witnesses, these technologies offer great promise, especially in the area where certain types of contamination are proving difficult to characterize and to remediate. To maximize that promise, we need to improve the incentives to get innovative technologies off the drawing board and into the field. We need to get rid of any obstacles that stand in the way.

In the end, this initiative will have a tremendous payoff by allowing us to more efficiently take care of the thousands of contaminated sites that are out there. It will allow this country to play a leadership role throughout the world in developing innovative technologies and exporting them to other nations. The job creation opportunity that I mentioned in this area is ours to seize and we ought not to squander that opportunity.

Now, I want to call the first panel to the witness table—Mr. Fortuna, Mr. Quarles, Dr. Bailar, Mr. Thomas Burack and Ms. Velma Smith. We welcome you all.

I'm reminded that my good friend from New Hampshire sitteth there and I would ask Senator Smith if he'd like to give an opening statement?

OPENING STATEMENT OF HON. ROBERT SMITH, U.S. SENATOR FROM THE STATE OF NEW HAMPSHIRE

Senator SMITH. Thank you, Mr. Chairman.

I might just say to the witnesses, the sparse attendance today is because of a fateful scheduling error by the Chairman at this time because Hilary Clinton is testifying before the Finance Committee, and several of our members are on that committee.

Senator LAUTENBERG. That's life in the United States Senate.

[Laughter.]

Senator SMITH. Anyway, this is a follow-up hearing on cleanup standards and risk assessment as to how they relate to Superfund. The Chairman has committed to holding several hearings on this which needed to be done and we are all very grateful for that. This panel certainly represents a wide range of interests and experiences in dealing with the Superfund law and I look forward to hearing each of their recommendations for hopefully improving the process.

I especially want to single out Mr. Tom Burack who served as the Vice Chairman of the New Hampshire Superfund Task Force which was organized by Congressman Bill Zeliff of New Hampshire. Mr. Burack is an attorney and he specializes in environmental law and has had a lot of experience with the Superfund sites in

New Hampshire. I am pleased he was able to make the trip to Washington today to testify before the subcommittee. I'll be interested in hearing some of those recommendations for Superfund reform.

I also want to commend my colleague, Congressman Zeliff, for his leadership role in forming the task force. Mr. Chairman, you and others may not know this, but the task force was charged with assessing all facets of the law. It was an initiative that he started and this task force is somewhat unique compared to other groups speaking on Superfund reform because of the diversity of its membership. It wasn't a loaded deck; all the major stakeholders were involved in the process from the municipalities to the insurers, the bankers, the business and environmental groups, State government officials, and everyone that Congressman Zeliff could think of that had any stake was involved in the task force.

I think it is important for this committee to hear the views of local communities across the country who are struggling with the Superfund's restrictive and costly cleanup process and have suggestions, good suggestions for improvement. We also should remember, in spite of all the benefits, that it is the local taxpayer, the businessowner in the community, and the municipality, who are most directly affected by the laws as well as those people who may be affected by the environmental problems Superfund sites do create.

I'm looking forward to the testimony today, Mr. Chairman, and I thank you.

Senator LAUTENBERG. We thank you, Senator Smith, for joining us.

We're going to ask the witnesses to take 4 minutes for a summary of your testimony. We don't shoot if you run over, but if you run over too long, the gavel—which hasn't been used in a long time here—gets sounded. You know that your full written testimony will be included in the record.

I would start by asking Mr. Fortuna if he would be the first witness. We look forward to your testimony.

STATEMENT OF RICHARD FORTUNA, EXECUTIVE DIRECTOR, HAZARDOUS WASTE TREATMENT COUNCIL

Mr. FORTUNA. Thank you, Mr. Chairman and Senator Smith.

I appreciate the opportunity to testify before the committee this morning on an important follow-up hearing to the investigate of the role of technologies and importance of permanent remedies in securing proper cleanup of Superfund sites.

When one discusses Superfund, the word success does not come to the lips of too many people. More often than not, people who are involved in this program are given to talking about their favorite failures. We certainly have issued our own share of reports focusing on what we see as shortcomings in the remedy selection process. To be sure, I'm sure you will hear more about that this morning.

I think few could argue, however, that the worst failure this program could ever register would be for this Committee, five years from now, to be holding a hearing on why the remedies of 1993 have gone bad. To have to re-remediate today's Superfund Site be-

cause of inadequate remedies would be the worst failure this program could visit upon the citizens who depend upon it the most. I think that is something we have to keep in mind. There certainly has been attention to many other aspects of the program and concerns that other parties have raised, but that, is clearly the most significant failure this program could have.

I think it's fair to note that despite the directive for permanent remedies in 1996 and its preference for technology-based solutions, there is growing evidence that these reforms may have come too late to reverse the mistakes of the program's early years when cap and contain remedies were virtually the exclusive remedies being employed. In our testimony today, we talk about several sites—Yaworski Lagoon in Connecticut is one outstanding example of where a cap and contain remedy is already going bad. Other witnesses who have appeared previously before the Committee have identified other failures of this program's early reliance on cap and contain remedies.

This morning, I'd like to make two points regarding what I see as our best success to make a site cleanup program a success. First, I think it is important that we have to stay the course on permanent remedies and the preference for technology-based methods so as to ensure that failed remedies will be the exception, not the rule. Second, we do need some midcourse corrections and we do need a new approach to the cleanup standards in SARA to ensure that we target our technologies and our risk reduction efforts on the worse parts of the worst sites while providing States, EPA and PRPs with greater flexibility to deal with the balance of the sites.

First, regarding trends in technologies, there are four points I'd like to make. First, since the 1986 SARA reforms, the cost of virtually all treatment technologies has increased, in some cases by more than 200 percent. Second, the diversity of technologies being employed at Superfund sites has decreased dramatically. Third, technologies that didn't even exist in 1986 are now mainstream technologies that are achieving very cost effective solutions. Fourth, technology-based remedies are more often the rule as opposed to the exception, as was not the case in 1986.

For further detail, I'd refer you to page 10 of my testimony where I have included a table of cost trends for large and small jobs for 1986 and 1993. You'll see that the cost of incineration has dropped by almost twofold. Slurry phase biotreatment, which wasn't a mechanism or technology being used very often at all in 1986, is now a mainstream technology. Solvent-vapor extraction, a very cost effective technology for dealing with volatile contamination of soil didn't exist in 1986, is now not only a mainstream technology, but its cost too has decreased by about 30 percent in the past 18 months. Land disposal costs have dropped dramatically as well. I would note that the costs presented on page ten should be discounted 20 to 25 percent for private client jobs due to the greater predictability of scheduling and mobilization.

Just as with every other environmental program that this committee has faced, from the RCRA's Land Ban Program to the Clean Water Act's Best Available Technology Program, when the statute secures a market for something other than dumping and rewards excellence in the process, technology will emerge, competition will

develop, and costs will decrease. This has also been the trend in Superfund.

Regarding cleanup standards, I would like to observe that to the extent that revisions are necessary to the program, the solution lies not in tinkering with the technology and "permanence" preferences of the statute, but rather with how the statute approaches the scope of the program's cleanup requirements, what has to be cleaned up and to what degree.

The only choices before us are not, as some are suggesting, between treating everything and treating nothing or capping everything. To revert back to a capping strategy really is tantamount to sanctioning the creation of environmental dead zones under the guise of cleanup. Rather, we need a substitute for the ARARS approach in the statute that essentially focuses our efforts on the "hot spots" or the higher areas of contamination and focus our technology efforts on those parts of the site to ensure that the source materials that created the problems in the first place do not become the next generation Superfund sites.

Under such a hot spot strategy, high concentration material would be required to be reduced by a significant concentration in the range of 90 to 95 percent, while the State EPAs and PRPs would be given considerable flexibility as to how the balance of the site was managed. I would point out that this hot spot strategy is not simply the product of our own thinking, but rather it's the product of a multiparty EPA Working Group on Contaminated Media that involved environmentalists, States, industry, ourselves and EPA, and is serving as the basis for a formal rulemaking in the very near future.

Most significantly, I would point out that this strategy represents the first multiparty compromise on Superfund policy in the 13-year history of this program. As such, I commend the strategy to the Committee as the most useful basis for guiding objective and rational debate on program revisions.

In conclusion, I would simply note that while success has not been the watch word of this program, policy reforms of the 1986 amendments are beginning to deliver on their promise. If we continue our course on technology-based remedies and permanence while making some prudent midcourse corrections to focus our efforts on the worst parts of the worst sites, in all likelihood five years from now, this Committee can hold a hearing where we begin to look on this program with pride as opposed to simply looking back on it with chagrin.

Thank you, Mr. Chairman.

Senator LAUTENBERG. Thank you very much.

Mr. Quarles?

STATEMENT OF JOHN QUARLES, HAZARDOUS WASTE CLEANUP PROJECT

Mr. QUARLES. Mr. Chairman and Senator Smith, I can immediately see we will have a lively discussion and I will do my best to stay within the limits to permit as much time for that as possible.

On behalf of the Hazardous Waste Cleanup Project, we do thank you for the opportunity to testify on Superfund. I'm sure that each

of you and the other members of this committee, and all the staff, have heard enough and have read enough to know that Superfund is a deeply troubled program, and that it requires fundamental change in order to serve the public interest.

Today, I would like to speak briefly to the purposes of the remedy selection process, the principles that we think should guide it, the changes that we ask Congress to make in regard to remedy selection, and then I'd like to talk briefly about risk assessment.

First, the purposes that should guide the remedy selection process. Remedy selection ground rules or criteria should be designed to assure adequate protection of health and the environment. That is the first principle. Second, they should be designed to assure a cost effective, sound investment of the massive resources that are going into expenditures at cleanup sites. Third, they should be designed to enhance the rate of progress and fourth, they should be designed to encourage or assure consistency from one site to another. That is a delicate question we will need to come back to.

We urge that the principles that should guide the process to accomplish those purposes are twofold. One, the ground rules should be site-specific and second, they should be risk-based. The position of the Hazardous Waste Cleanup Project on what Congress needs to do in regard to remedy selection is as follows.

We believe that the ARARs and preferences should be deleted. We believe that the remedy selection process should be redesigned to concentrate directly and primarily on risk assessment as the governing mechanism to guide control decisions. Third, we believe that the risk assessment methodology needs to be reformed.

Let me move on to concerns about risk assessment, and yes, we do believe that there are problems in the way risk assessments are done. We think it is an important, sound, basic approach but the methodology needs to be changed. In the reports the Hazardous Waste Cleanup Project has prepared and submitted to the committee and others in July, particularly in the report, "Exaggerating Risk", we have explained in a lot of detail the problems that we do see in the way the methodology is currently carried out.

I will highlight just three points. First, the process involves a cascading of conservative assumptions. You take one assumption on one issue, one on another, one on another, and they are all conservative. You then multiply those together and you get a multiplied conservatism which can easily raise the projection of risk one, two, three orders of magnitude. These can be very substantial distortions.

Second, there is a disconnect between the risk assessment methodology and the decision process on what to do at the sites. The way that risk assessments are done is not understood, either by the public or even really by the regulators.

Third, there are a number of extreme examples in the way risk assessments are done. For example, in situations where a site is located in an area where an alterative water supply is being used and the assumption is made that people are going to continue to withdraw and us the groundwater, if that can be protected against, that cuts off the exposure. There are other situations, especially involving exposure assumptions as to land use where the basic as-

sumptions are very misleading and not properly reflected in the risk assessment.

In concluding this very brief summary, I want to emphasize the breadth and the force of consensus within American industry on the types of changes that need to be made in Superfund in order for it to serve the public interest. There are six basic points on which there is a strong consensus. If you look at the members of the Hazardous Waste Cleanup Project, which are broad national associations and the industries they represent, the auto industry, the steel industry, the paper industry, the insurance industry, the chemical industry, the petroleum industry, essentially all of industry is in agreement. I am not saying that you or others will think they are right, but industry is in agreement on these basic points.

One, remedy selection is the number one priority in the entire Superfund debate. I need to qualify that point a little bit because there are strong interests in liability and the insurance industry, in particular, has concerns on those as do some others, but basically for the manufacturing industry, remedy selection is the number one priority. Second, the current remedy selection process is broken—it needs to be fixed. Third, the answer that we should be looking for is a risk assessment-based approach. Forth, ARARs and the preferences for permanence and treatment should be repealed. Fifth, the risk assessment process itself needs to be modified to produce more accurate and reliable assessments. Sixth, these changes must be made by Congress. An administrative fix will not suffice, Congress needs to act.

Thank you, Mr. Chairman.

Senator LAUTENBERG. Thank you very much.

Next, we will hear from Dr. Bailar, please.

STATEMENT OF DR. JOHN C. BAILAR, III, M.D., PROFESSOR OF EPIDEMIOLOGY AND BIOSTATISTICS, McGILL UNIVERSITY

Dr. BAILAR. Thank you, Mr. Chairman and Senator Smith.

I'm here to talk about the quantitative assessment of toxic risks to human health. The pervasive fact of this kind of risk assessment its the great uncertainty. Bounds between the upper reasonable limit of risk and the lower reasonable level commonly vary by 1,000 fold, and it is not uncommon to see much greater uncertainty. In this context, what has come to be called by EPA and others the "worst case", is not, in fact, the worst case. It is a very bad case in every instance but things might, in fact, be worse.

I agree with these industry proposals that some change is needed to correct two kinds of problems, but I come to different and much less radical recommendations. There is not nearly as much wrong with risk assessment as some observers believe. The two problems that I refer to are first, EPA has indeed occasionally overestimated risks by so much as to appear foolish. Each of these instances needs prompt repair, but what we have at this point is a small collection of anecdotes rather than evidence of a very broad problem in this respect. I am not saying that such evidence could not be developed, but I simply have not seen anything go beyond a few horror stories.

The second kind of problem is that the EPA risk assessment process has become hidebound as well as very slow and expensive.

These problems of rigidity, time, and cost are a result of nearly constant serious challenges to EPA's risk assessments. It is for this reason that the agency has necessarily become highly defensive, and this defensiveness is reflected in its attention to minute detail and layers of review, even when it is clear that more detail and review is unlikely to change things very much.

I would like to use my remaining time to talk about the presumed conservatism in risk assessment. By "conservatism" in this context we mean highly restricted exposure to toxic agents, even when the true risk is likely to be very small or zero. I would like to make five specific points showing that our risk assessments may not, on the whole, always be conservative. We have heard, and we have read in the public and technical literature, lists of reasons that push risk assessments toward the conservative side. We are not so used to hearing things that also work the other way.

The first thing is the question of the ability of present information to demonstrate that there is a risk or to estimate its size. If EPA, Food and Drug and other agencies are interested in protecting the public to a general level of risk of, say, 1 to 10 concerns over a lifetime per million people, we have to consider what kind of experiment could, in fact, detect and show such a risk. It would take hundreds of thousands of animals. The standard size of these experiments cannot go much beyond 50 animals.

A second general problem is what I call "aug thinking". If we underestimate a risk by a factor of 10, we've made a 90 percent error. If we over estimate by a factor of 10, we have made a 900 percent error, and those do not balance out. Tenfold down, tenfold up sounds like it ought to come out about even and it does not.

A third bias, an anticonservative bias, is that many risk assessments focus on a single adverse outcome, perhaps a single form of cancer. They ignore other forms of cancer, ignore possible effects on reproductive health and reproductive outcome, ignore organ toxicities, and so forth.

A fourth point is that this focus on a single adverse outcome is generally paralleled by a focus on one or perhaps a very few substances in a specific mix, those substances that have, in fact, been detected and measured, and for which there is adequate information to conduct a risk assessment. When there are hundreds or thousands of chemicals present in a waste dump, we may have an estimate of a risk for just one or two.

The last is the likelihood, in fact often a certainty, of great person-to-person variation in sensitivity to environmental hazards. Risk assessments that are perfectly reasonable or even a good bit too high for where the average person may still be a good bit too low for a subgroup of sensitive people, a subgroup of substantial size.

Thank you.

Senator LAUTENBERG. Thank you very much.

Mr. Burack?

STATEMENT OF THOMAS S. BURACK, VICE CHAIRMAN, NEW HAMPSHIRE SUPERFUND TASK FORCE

Mr. BURACK. Thank you, Mr. Chairman and Senator Smith.

On behalf of the New Hampshire Superfund Task Force, I'd like to thank the committee for the opportunity to testify here today.

The task force, as Senator Smith described a moment ago, consists of a broad range of interested parties and from the very outset, we tried to reach consensus on as many issues as possible covering liability, process and remediation concerns.

Our overall goal, as we looked at the law, was to find ways to make the law as equitable, efficient and cost effective as possible. With your permission, I'd like to submit the entire report for inclusion in the committee's record.

Senator LAUTENBERG. It will be included.

Mr. BURACK. Thank you.

The task force believes that the overall goal of Superfund must be to reduce risks, particularly those substantial risks to public health and the environment. We also feel that the Federal Government's most appropriate role would be to oversee rather than micromanage the Superfund process. We believe there would be great efficiencies attained through greater delegation to the States and giving the States greater ability to make risk decisions. Above all, throughout the risk area, we believe that flexibility—a term that a number of other panelists have used already this morning—must be provided.

We feel that remedies should be risk-based and predicated on realistic rather than worst case assumptions and we also believe that remedy selection must take into account the needs and concerns of the local communities and the businesses that are going to be affected by them as well.

The cleanup goals that we select should correlate with those actual risks that we see at these sites and there are a number of ways that those risks can be brought under control, including through the use of institutional controls that can effectively eliminate or greatly reduce the actual exposures that people may have to, for example, contaminated groundwater.

We believe that the Superfund law should place initial emphasis on the immediate reduction of actual, substantial risks and that we should find ways of streamlining the overall site study and site assessment process so that we can conduct, as much as possible, one single study to determine what needs to be done at a site and then make a decision and move forward. We have many sites in New Hampshire where the sites were listed some 10 years ago and only just now are we reaching the point where we are actually seeing records of decisions issued by the EPA.

The degree and the type of residual risks should be considered as major factors in selecting a cleanup standard. We ought to use residual risks rather than the original risks posed by a site to determine what the remaining cleanups ought to entail. We want to ensure that the remedies we do select are cost effective. Cost benefit analysis, we believe, should be applied in the selection of remedies and, as I said before, institutional controls should be a part of that, as should the impact on local communities.

I just became aware yesterday of a bit of work done by folks at the New Hampshire Department of Environmental Services in which they compared the costs of addressing comparable sites under Superfund and under State corrective action processes. Not

surprisingly, there are some considerable differences in the costs between those two different approaches to the tune of an order of magnitude difference.

Senator LAUTENBERG. Which one was cheaper?

Mr. BURACK. The State found that the cleanup costs under the State procedures would be roughly one-tenth of what it would cost to clean up these sites under the Federal Superfund statute.

In summary, we believe that the Superfund law is seriously in need of legislative reform that should focus on flexibility, that should look at how risks can best be used to gauge the extent to which sites need to be addressed, and we believe those decisions must be sensitive to the local welfare.

Thank you very much.

Senator LAUTENBERG. Thank you very much.

You can tell that Mr. Burack spent time with this committee some years ago and worked with I guess Senator Smith's predecessor.

Mr. BURACK. That is correct.

Senator LAUTENBERG. So you know what happens to staffers who don't do things on time.

[Laughter.]

Senator LAUTENBERG. Thank you very much. Of course I'm joking.

Ms. Smith, we're pleased to have you here and we'd invite you to give your testimony.

STATEMENT OF VELMA SMITH, DIRECTOR, GROUNDWATER PROTECTION PROGRAM, FRIENDS OF THE EARTH

Ms. SMITH. Thank you, Mr. Chairman and Senator Smith.

I'd like to start this morning with the area that others end at, the area of health threats from Superfund sites. You've heard that remedies selected under Superfund are too costly. They are too costly because the risks are not great. You've heard, not directly here this morning but elsewhere, that while the technologies for groundwater cleanup don't work, that failure is of minor consequence because the risks of the pollution that can't be put right are really very small. That, in our view, is wishful thinking.

This debate has been framed as if scientists have witnessed in the last few years a major ground shift in what we know about toxic chemicals and human health. This is simply not true. Superfund sites do pose health risks and I urge you to take a look, if you haven't already, at the testimony of ATSDR on this point. If you're looking, as you do that, for words like "proof" and "irrefutable," I would just ask you to ponder for a minute how long it took us to understand the hazards of cigarette smoking. I would ask you to ponder the changes that we've seen over time in our standards for exposure to chemicals like benzene and lead.

No one can quantify the risk with the Nation's Superfund sites but the inability to quantify should not serve as a rationale for inaction. The uncertainty and the issues at stake underscore the validity of the fundamental notions behind Superfund. Act quickly, remove contaminants from the environment and employ the best technologies available to assure that clean stays clean and that the

arduous task of cleaning up can actually be declared complete at some point in time.

Today, it appears that Superfund goals of protection and permanence were not off the mark, but that the magnitude of the messes that have been made has been grossly understated and the capabilities of cleanup technologies have indeed been vastly overrated. The course is not wrong but much harder and longer than what we predicted.

My counterparts in industry I'm afraid do not appear to enter this debate with remorse for those messes and regret for the miscalculations and mismanagement which have yielded closed drinking water wells, fish consumption restrictions, or truckloads of contaminant-laden soil. Instead, they bring a righteous indignation that Congress should impose a task so costly and so difficult. The program, not the pollution, has been made the culprit. That approach to the debate, in our view, is frankly irresponsible.

Despite the unknowns, the PRP community appears firmly convinced with the ability of quantitative risk assessment not just to yield perspective but to dictate straightforward answers. EPA, they argue, has adopted approaches which are ultraconservative and invalid. These critics are guilty of precisely the same deception they accuse the agency of, muddling the value decisions of risk management with the calculus of risk assessment. The use of conservative or even ultraconservative values is not invalid or unscientific on its face. If the agency is directed to protect all of uss, then its arithmetic must use worst case assumptions. If the Congress decides instead to offer protection from environmental hazards only to some, then average or lower-bound statistics become more appropriate.

We also take issue with the proposition that EPA risk assessments are overall highly conservative. There are many reasons why this is not the case. I will not repeat Dr. Bailar's testimony.

PRPs have cried loud and long about just a few risk assessment variables which to which EPA may be making conservative judgments in the absence of solid, site-specific data, but in the words of Adam Finkel, they choose to ignore a body of evidence strongly suggesting that as a whole, neither exposure assessments nor dose response assessments have seriously exaggerated their final outputs. Risk assessment is the process polluters love to hate. It is malleable, it is complex and arcane, it is virtually inaccessible to the general public, and can be criticized at the same time that it is being manipulated.

Thus, we believe that Congress should put some limits on these resource intensive, yet uncertain exercises. One way to do that is to adopt soil cleanup standards. As you consider the approach outlined earlier by my colleague Linda Greer of Natural Resources Defense Council, we also urge you to consider a bit of preventive medicine for this program requiring soil standards for protection as well as cleanup.

To deal with the issues of dense, nonaqueous phase liquids, we believe that Congress should first, retain Superfund's requirement for groundwater cleanup to drinking water standards, but call for a special EPA initiative that would require a rigorous evaluation of sites for residual DNAPL problems. EPA can, under current law, make feasibility waivers available for intractable DNAPL problems

but it must do that only where there is extensive and compelling evidence that cleanup strategies will not be effective. For any site at which such a waiver is invoked, we believe EPA should collect an up front payment from PRPs involved that will offset the expenses attendant for long-term management of the site.

Some of the things we think that Congress should do to address the use of institutional controls. We urge you not to write off groundwater resources, but in cases where it is clear the technology will not allow full cleanup for the foreseeable future, site characterization and continuous monitoring must be undertaken not with a least cost approach or a single study. PRPs must be required to use the full state of the science, to assure plume containment, to protect water users from harm, and to safeguard surface water sources as well.

For land use controls, our goals should be to restore all sites to a full range uses. Where technology uniquely constrains available options, restrictions may be necessary. For these cases, Congress should mandate a process which assures, first, that the needs of neighbors are addressed; that contemplated restricted land uses are acceptable to the local community and consistent with its planning and zoning; and that continued industrial activities do not take place on sites which are uniquely vulnerable to continued contamination. In no instance, would we see justification for a decision for closing future land use options without the participation and the consent of site neighbors and the local community. In no instance would we endorse a less than full cleanup alternative on a site directly adjoining or in close proximity to homes, schools, hospitals, playgrounds or other sensitive land uses.

I thank you, Mr. Chairman, and I look forward to the discussion.

Senator LAUTENBERG. Thank you very much.

I might say we have some differences in view. Mr. Quarles promised a spirited discussion.

Dr. Bailar, in light of things that you've said and the things we've heard this morning, if you had to choose between whether or not Superfund risk assessments are overly conservative or not protective enough, where do you come out and what is the reason?

Dr. BAILAR. I think we do not really know whether they are too conservative, or whether they are too far in the other direction. My reasoned opinion, after a lot of years looking at these things, is that they are probably, on average, about right. EPA's risk assessment methods are squarely in the mainstream of science, despite a few scientists toward both extremes who make big noises, and I feel that the risk assessments, as scientific and technical documents, are about as good as anybody could make them in the face of the enormous uncertainty that I have described.

Senator LAUTENBERG. Ms. Smith?

Ms. SMITH. I would say my general sense, not having read hundreds of risk assessments, is that EPA may be, in terms of the risk assessment science itself, at least in the ball park. They may not be on the end of the ball park that I would prefer them to be, but I think they may be in the ball park in the mainstream of science. However, in terms of coming to some of the cleanup decisions, I would say from having read actually close to a hundred records of decisions, I have yet to see a cleanup that requires pristine levels of

cleanup. I think in many instances, we may be underestimating what we need to do for groundwater protection and we may be revisiting these sites over and over and over again because of continued groundwater problems. I think where we may be falling down is underestimating how contaminants will move through the environment to groundwater and surface water.

Senator LAUTENBERG. Dr. Bailar, is it reasonable for EPA to make the assumptions that it does when it lacks precise data about a particular site?

Dr. BAILAR. Again, I have to refer to this great uncertainty and ask the question, how much proof do we need? If you're going to insist that we have proof to the standards used in criminal trials, that is beyond a reasonable doubt, then we will come out with very low estimates of risk, very high allowable exposures, and there will in time be an awful lot of sick people. I think lesser standards of proof would be appropriate——

Senator LAUTENBERG. Why do you say that? We're committing significant funds, effort, emotion, within the communities. How can we make those?

Dr. BAILAR. Consider, sir, the manufacture of a brand new chemical, something that's never been made before in more than laboratory quantities, but something about the chemical structure may raise questions about toxicity. We can conduct animal experiments in the range of 50, 75 or 100 animals at each dose group for each combination of sex and species of animal and so forth. Such a risk assessment might be open to the criticism that maybe people are different, a perfectly reasonable criticism. Yet, if it's a new chemical, there is no possibility of having any information about the effects of human exposure. Should we treat such a chemical as if it is safe until we have the proof from human studies? I think not.

Senator LAUTENBERG. That is a real debatable question because we hear different views and Superfund is getting lots of reviews from lots of people. The more frequent criticism is it cost too much and why bother. So what I want to do as we review Superfund is to try and get as clear a picture as we can. We're not scientists—maybe Senator Smith might be, but I'm not, but the fact is that we'd like to be able to get an easier handle on things.

You say if you have to fall one way or the other, fall to the side of more protection than less, but it is not without a cost. It's not just a dollar cost, it's energy and time. So I'm wondering with your response respectfully noted, how do we take the next step if we have insufficient data? What is it that triggers us to go ahead and to start the remedy?

Dr. BAILAR. One of the things that is almost always missing from risk assessments and might be extremely valuable to you, to the public, to the scientific community, is an estimate of the full range and the likelihood that the risk falls at various points along that range. Having a single number is simply not sufficient, whether it's a best estimate, an upper bound or lower bound. I think we need to know the full range of probabilities, of likelihoods that the risk is at one place or another. We might, for example, have some dose that we all agree is probably pretty safe, maybe 90 percent chance that there is no risk at all. But if there is a 10 percent chance that it is going to have a very bad effect on a small part of the popula-

tion—say 1 in 1,000, or 1 in 100—then that ought to be considered in the risk assessment. It ought to be reported in the risk assessment document and considered by the risk managers.

Senator LAUTENBERG. I, for one, would like to reduce the risk to the public to as great a degree as possible, but I am compelled to examine the criteria by which we measure this because a choice is not without cost. What we do in one place may prohibit or eliminate the possibility that we are going to be able to deal with another perhaps more toxic, more threatening.

Dr. BAILAR. I'd like to respond to one phrase you mentioned. I don't think I'm advocating that we fall to one side or the other. I think that we are, in fact, about where we ought to be, that when you consider the ways risk assessment may underestimate hazards as well as the well-publicized ways that it may overestimate hazards, we come out looking pretty good.

Senator LAUTENBERG. Do we have to go vote?

Senator SMITH. Yes, we are about halfway through the votes, Mr. Chairman. I'd prefer to ask my questions when we come back. I'd prefer to go vote and come back and ask my questions.

Senator LAUTENBERG. Why don't you start? I'm going down. We may have to recess for a few minutes.

Senator SMITH. We're halfway through it now.

Senator LAUTENBERG. So we've got 9 minutes to go.

Mr. Quarles, I suspect you might have a different point of view. You suggest changing the risk assessment process to avoid overestimating the risk. What if we wind up underestimating the risk? The price that is paid on one hand is cash, money, and I'm not dismissing that at all, but if we make a mistake and it's your child, someone else's children, that's a terrific price to pay. So how do we protect against underestimating the risk?

Mr. QUARLES. Thank you for giving me a chance to comment on this discussion. I think what Dr. Bailar has been saying in terms of the risk assessment process and talking about new chemicals, which I think is more into a TSCA area than a Superfund area, is perhaps an accurate academic evaluation of some of these issues, but I think that Dr. Bailar would agree that in addressing the various variables that are in the risk assessment process—and there are many, many of them—that it's really not EPA, but it's their contractors in the field, who attempt to estimate the range on each of these items and then pick the more conservative assumption. The point is that you do end up picking a conservative assumption as to what are the substances in the ground, a conservative assumption as to what would be the toxicity of those substances if there was exposure, a conservative assumption as to a variety of issues that come up on whether there ever will be exposure. Then when you multiply all those together, you end up with a result that comes out at say 10–5 and what I'm saying is that 10–5, if you took a more average assumption might well be 10–8. In other words, the public is getting the impression that there might be one chance in a million where there might in fact be one chance in a billion.

We all have different views. I want to just refer to the fact that EPA believes that they are doing the risks in a conservative way. I attached to my testimony their description of risk assessment for

Superfund purposes and their statement is, because EPA uses assumptions that tend to overestimate the predictions of risk, so their perception is that they are overestimating risk. I think their perception on this point is exactly on target.

I want to move to the question you asked though as to if it's my child because this is where it comes to a point that is very significant and the point that Ms. Smith was discussing in the sense of what are the consequences.

Usually, what we're talking about at a practical site is what is going to be the remedial action carried out. Among the various options that are considered, all of them usually will guarantee a complete interruption between where the substances are and any actual exposure of people to those substances. We can say capping and containing and so forth, you may have to come back to it, you may have to do it over again. You say the land is presently in industrial use, maybe it will change to residential use. There are a lot of practical questions that come up. All of these will require continuing involvement and management.

The prospect of exposure is eliminated under any of these different scenarios. So there is no risk to my child in almost every one of these situations. The question is, are we going to dig up all this material and burn it or are we going to manage it in some other way. That does get to resources.

Senator LAUTENBERG. We're not talking about the final remedy; we're talking about risk assessment. That's the triggering mechanism. Do we start this process or do we simply say okay, the risk assessment is de minimis and therefore, we can cap it.

Ms. Smith, you have a troubled look?

Ms. SMITH. I do, Mr.Chairman, and I know you have to leave to vote, but I just have to respond because I absolutely do not believe that you can say flatly that we guarantee no exposure at these Superfund sites. I think that precisely the opposite has been the case in the many, many records of decisions which I have reviewed and in many instances where I've talked to community people. We do not guarantee no exposure. It may be that we're hoping there is no exposure, but we certainly do not guarantee no exposure.

I don't believe that the comments that Dr. Bailar made are simply academic. They are very real life issues. If you have a child who is immune deficient, he may be a thousand times more susceptible to harm than another child. If you are living next to a Superfund site where only 4 percent of the organic content of the groundwater contamination has been characterized and no one knows what the other 96 percent of the contaminants are, this is not an academic exercise in terms of what your exposure will be. These are not academic, they are real life problems. For this reason, we must go with conservative assumptions.

I have yet to see a Superfund site cleaned up to pristine levels. We may have thought back in 1980 that we could have cleanup to background levels, but we haven't done that, and I don't think anyone before you today is still arguing that we should have pristine. We are not going to get there. Whether we should have protective cleanups or not, that is the question.

Senator LAUTENBERG. I hate to cut this off. Please forgive me, we have no control over that. If you would simply sit tight and we'll be back in a few moments.

[Recess.]

Senator LAUTENBERG. We just had a good happening, we had two votes for the price of one.

Senator Smith, in fairness to you, I had a first round of questioning. If you'd like to go now, we'll go back on the clock.

Senator SMITH. Thank you, Mr. Chairman.

Let me just start with a question for you, Mr. Burack. As you went through the process with your task force and tried to draw some conclusions, did you see or find any example in a specific site where an unreasonable risk assumption resulted in what you would consider to be an unnecessary or costly cleanup remedy?

Mr. BURACK. Senator, we looked at every site in the State in essence as we went through our process of formulating our recommendations. One site in particular to my mind stands out as an example of where a risk assessment assumption—and we don't know the final end point—led us down what I think we would all agree is a fairly expensive path.

It involves the Summersworth Landfill which was a landfill that the town began to cap in about 1980. Part way through the capping process, as I understand it, the site was scored, ranked on the NPL and currently the site stands as number 16 on the NPL. That was back in 1982. At that time, the town was directed to stop any further capping of the site. The risk assessment was performed and it was found that there was no current risk of a substantial nature that would require any remediation for the site, at least for the groundwater.

However looking at future theoretical risks, this risk assessment concluded that there could be a problem. What the risk assessment did was to look at an upgradient well, for which the source of contamination still has not been located, and concluded it was possible that if people drank water contaminated at the levels in that upgradient well from wells that could be drilled downgradient of the site in an area where since 1972 there has been public drinking water supplied, that is to say, if people were to sink wells there and consumed water contaminated to the levels in the upgradient well, there would be a very low, theoretical future risk of cancer. Based on that, they concluded that there had to be a groundwater remedy at the site. What is now happening is that they are looking at what the appropriate technologies would be beyond simply capping.

If you look at the entire universe of landfills in the State of New Hampshire, I think it's fair to say the overall impact to the environment of that site has been benign and it's also relatively benign by comparison to other sites. It's also fair to say that there is no current risk that anybody will consume contaminated water in the vicinity of that site now or any time in the foreseeable future because we can put appropriate institutional controls in place. In fact, they are in effect there already through the use of a public drinking water supply.

The only potential silver lining to all of this is that one of the potential remedies that is now being looked at is the use of an in-

novative technology that I understand is called "Environmental" that would in essence treat the groundwater that passes through it through some kind of a passive dechlorination process. The total cost to install that would be about $11 million as I understand it; capping the site would be several more million dollars. That would be to do a permeable cap so that the water could filter through the site. Ultimately, it's possible that EPA could require that there be a nonpermeable cap put on top which could raise the cost of the site even higher to the $14 or $15 million range.

Senator SMITH. Just a brief follow-up and a couple of questions for the other panelists.

I think I heard you right, you said that your task force concluded that some of these sites could be cleaned up or estimated to be cleaned up at one-tenth the cost that would be under the CERCLA law. Can you briefly, without being specific on any site, in a generic sense, tell me what criteria that's based on? Is the cleanup comparable to what is now demanded under CERCLA? See if you can be specific on that, if you can.

Mr. BURACK. Senator, again, this is based on materials that I just received yesterday from the Commission of the Department of Environmental Services in New Hampshire. The premise is that effectively the same level of protection of human health and the environment is being achieved whether under Superfund cleanup applying in many instances what would be a RCRA Subtitle C closure as opposed to applying State corrective action standards. There may be slight variations in the complexity of the cap that is being installed. At many of the sites, you may not actually need to install a groundwater treatment system in the first instance because it may be that by putting the cap on, you effectively deal with your leachate problem.

There are very substantial cost savings to be had from looking at sites at the outset and asking what may be an appropriate remedy here, reducing the number of possible options that you look at and engineering something that realistically is going to meet your needs as opposed to engineering for the extreme worst cases.

Senator SMITH. Ms. Smith, let me ask you a question. On page 17 of your testimony, you give a number of examples of sites that have changed from industrial sites to something else. In your view, why is the system of land regulation under local laws, a system we've basically had for some 200 years, not sufficient to provide enough protection against changing sites in the future? Couldn't Congress make some adjustments in laws applicable to real estate transfers to address your concerns with appropriate restrictions on the land? We do that all the time in real estate transfers. Why could we not do it here without having this involved in some Federal statute?

Ms. SMITH. I think I understand your question. Let me see if I'm responsive to what you've asked. I believe, first, the arguments have been made that local zoning and planning at one level could deal with the land use restrictions that would be required under Superfund. Having experience as a local planner, I would argue that while some people say zoning changes are a rare occurrence, they, in fact, are very common. There are probably indeed more lawyers employed getting zoning changes in communities across

the country than in arguing about Superfund remedy selection. Zoning changes are a matter of course in many communities, so we can't expect local zoning to deal with this.

I've spoken to a number of attorneys who are experienced in the field of conservation easements, looking at what you would do if you had not just a deed notation, but a deed restriction. In that area, some years ago when conservation easements first became popular, there was a mixed bag of decisions from the courts around the country as to whether those easements did carry with the land. There were not consistent reulings among the courts that once a property was transferred that a deed restriction transferred with the property.

At that point, the community interested in conservation easements secured a Uniform Conservation Easement Act and that clarified that those restrictions should carry with the land. If Congress chooses to call for deed restrictions, what I've said is they would have to adopt at a Federal level, a requirement and make it clear that deed restrictions would carry with the land. This, I think would be unprecedented, bringing the Federal Government into an area which, for many years, they have been very adverse to do which is to step into areas of State and local land use control. The Federal Government would have to do that to assure that these restrictions would stay permanently and be enforced.

Senator SMITH. Are you advocating that?

Ms. SMITH. No, I'm not. There are some sites that regardless of the technology, regardless of our risk assessment, regardless of what our value judgments are about a site, some restrictions are necessary. So it may be that we should consider some kind of amendment that will make any deed restrictions that are noted permanent.

Senator SMITH. I think it's the enforcement mechanism. You can have any number of restrictions, as any attorney here knows, on a piece of real estate, but it's who is willing to enforce it that's important. If no one is willing to enforce the restriction, for example, no hunting on a 100-acre parcel, if whoever the landowner is doesn't choose to enforce it, it's doubtful that anybody is going to enforce it.

Maybe I'm not hearing you correctly. Are you saying that the local community affected by whatever the site is that has the restriction, that they ought to be the enforcer or are you saying the Federal Government should be?

Ms. SMITH. What I said in my testimony is that we should provide for both. One, Congress would have to stipulate that the restriction would carry in perpetuity. I think at your last hearing it was the representative from the Attorney General's Office in Minnesota who mentioned that in Minnesota, deed restrictions only have a life of 20 years by State law.

What I'm saying is if Congress wants to take this course, it must preempt State and local situations like in Minnesota and say that deed restrictions under Superfund would carry for perpetuity.

I understand the question of enforcement. There are easements and appurtenances in gross and if there is a neighboring property owner who benefits from an easement, then they are the enforcer,

but in this case, it is sort of general society who benefits and there is no particular enforcer.

My sense is that we ought to have a system that allows for enforcement by both the local community, local citizens, citizen suit enforcement, and Federal Government over time.

Senator SMITH. Mr. Fortuna, in your testimony, you state that the existing provisions in the Superfund law do not require that everything be treated. As I understand the law, that's not really true, that there is a strong preference for permanent treatment. Doesn't this preference drive the remedies toward permanent treatment?

Mr. FORTUNA. It does but I think you used two very key terms there. One is that it's a preference for treatment, not a mandated requirement and that the goal for permanence is really that, it is a requirement to seek permanence for the remedy to the extent practicable. To the extent practicable has been interpreted in a wide range of ways.

I think any narrative standard that you come up with is going to have a varying range of interpretations. We have produced two reports identifying over 50 sites where we think that directive has amounted a violation of the statute, where the cap and contain has been employed where it is totally inappropriate. I'm sure the other side can point to examples of where they think the statute has gone too far where you have what some consider a de minimis risk and where extensive or expensive technology has been employed.

I think you're going to have that with any narrative standard. Again, as I said in the testimony, I don't think the problem lies there or the resolution doesn't like there, the resolution lies in how we approach cleanup period. What are the cleanup standards at sites, not whether we seek it through permanent remedy or technology.

I think the ARARS concept in the statute seemed like a good idea at the time and considering the fact we're reading this book at the same time that we're writing it, I'm loathe to be terribly critical of ARARS, but I think we're ready to move beyond that lowest common denominator standard in the environmental statutes and find a better way to optimize our resources and our risk reduction by what we have termed the hot spot strategy.

Senator SMITH. I'm intrigued by your testimony because you folks are out there on the front line in terms of the treatment. Obviously, your membership benefits from using these treatment remedies, and a lot of people listen to what you say and are probably somewhat impacted by what you say here, or even tend to maybe react positively to what you say.

I don't understand. You're advocating treating hot spots and treating lower risk areas with more flexibility. Wouldn't you get the same result using a risk-based approach? As suggested by Mr. Quarles or Mr. Burack, both approaches are based on risks. I don't see where there is any less benefit to your organization or your group. Why do you take that position?

Mr. FORTUNA. We're not approaching this from the standpoint of simply how does it benefit our group. We've got a program that doesn't work and that doesn't benefit anybody, including our members. I think your question really gets to the heart of the matter.

A hot spot strategy essentially marries the concept of technology-based approaches and risk-based approaches. It is not an all or none kind of approach as is being posited by the other parties. It is a false choice to say, we ought to risk assess or treat everything.

I think if one thing has become clear from this discussion this morning, it is that the risk assessment process is a roll of the dice. Whether you like risk assessment, whether you hate it, or you are ambivalent to it, it's a roll of the dice. It is really an arraying of uncertainties as opposed to the divining of certainties.

What we are saying, and what I think the EPA Work Group on Contaminated Media says is it we're going to roll those dice and be more flexible when it comes to the parts of the site that are less contaminated. When you deal with the hot spot material, the source material that created the problem in the first place, the stuff that is a 1 in 1,000 cancer risk, we want to make sure you get significant reductions through technology-based methods. Really, it's a marriage of the two concepts of saying, we want technology-based reductions and we don't want to take a chance on "risk-assessing" away the thing that caused the problem in the first place. We're willing to roll the dice for the other material which arguably may be more marginal or de minimis. I think that's how the two concepts work together and make sense.

Senator SMITH. Thank you very much.

Senator LAUTENBERG. There are obviously lots of questions. We respect the views of those with whom there is a difference from the present law as it is. We would ask that you please respond to questions that we will submit to you in writing. Your prompt response would be appreciated, and as thorough as you can make it. The questions that loom are real and costly.

New Jersey, for instance, just did away with a law it had, the ECRA law in which the selling party on a piece of property was responsible for delivering that property in "clean" fashion. It was thought to be an inhibitor of some significance. Obviously it's an inhibitor because it's supposed to be. You're not supposed to be able to transfer it willy nilly. Deed restrictions hardly seem a sufficient thing to do in this Senator's view, but nevertheless, the comments made are worthy of review.

I would close this session by coming back to something that Ms. Smith said earlier and that is how long did it take to detect the hazards of smoking? It didn't take that long but what took a long time was to get past the obstructionists who continue to this day to deny the science or the evidence that leads to the conclusion that it's pretty dangerous. So that's what took a long time.

So I thank you very much for your testimony and I will call the next panel now: Mr. Kovalick, Mr. Moscatello and Dr. Hankins.

We will start off, Mr. Kovalick, with your testimony. We're going to run for 5 minutes and ask you to conclude at that time. You know your full testimony will be in the record.

Thank you for coming, all of you. Mr. Kovalick?

STATEMENT OF WALTER W. KOVALICK, JR., ACTING DEPUTY ASSISTANT ADMINISTRATOR, OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE, ENVIRONMENTAL PROTECTION AGENCY, ACCOMPANIED BY STEVE LINGLE, DEPUTY DIRECTOR, OFFICE OF ENVIRONMENTAL ENGINEERING AND TECHNOLOGY DEMONSTRATION, OFFICE OF RESEARCH AND DEVELOPMENT, ENVIRONMENTAL PROTECTION AGENCY

Mr. KOVALICK. Thank you, Mr. Chairman.

I'm accompanied today by Mr. Steve Lingle who is the Deputy Director of our Office of Environmental Engineering and Technology Demonstration in the Office of Research and Development. Thank you for letting me submit my statement for the record.

I wanted to highlight several points of our work to increase the use of innovative technologies in the Superfund Program. As a matter of background, with almost 1,300 sites on the National Priority List, we will have completed over 200 site remediations by the end of this fiscal year which is coming upon us today and have over 260 innovative treatment technologies projects planned, underway or completed in the remedial program over time.

My office was established in 1990 to address the informational, institutional and regulatory barriers to the use of innovative treatment technologies that will provide less costly or more effective solutions at the same cost in the Superfund Program as well, we hope, in other programs such as the RCRA Corrective Action Program.

We have focused our efforts on removing some of the major barriers, in particular, the availability of cost and performance data, for the use of our main customers: EPA and State Project Managers, consulting engineers and responsible parties. We also try to assist developers of technologies to understand and better address the fragmented remediation marketplace.

Let me highlight our efforts to develop partnerships with industry users who are using these technologies and share the risk with them and work of developing and evaluating new technologies. Our public-private partnership with seven companies, the California EPA and the Air Force at McClellan Air Force Base is outlined in our testimony. There is an effort to address some of the legal and financial barriers faced by PRPs working jointly with the Government to accumulate cost and performance data. We plan to clone these arrangements with other Federal facilities in the future and offer more and more PRP companies the opportunity to share risks.

The Remediation Technologies Development Forum and the Joint EPA-Industry Responsible Party, and University Venture plans to have its first joint applied research projects in the field, in the ground, next spring. They have other plans to work on three other remediation areas.

Last, the Federal Remediation Technologies Roundtable, which I chair, has provided an opportunity to work jointly with other Federal agencies to share information and plan joint approaches, and the introduction of innovative technologies. We're particularly pleased with our joint work with the Air Force to implement bio-

venting at over 100 Air Force bases as the acceptable remedy for removing jet fuel contamination.

With regard to assisting developers, the EPA Site Program, which Mr. Lingle manages here in Washington, continues to furnish important short-term data on full scale costs and performance of technologies of our own employees and the engineering community at large.

In addition, in an effort to assist developers and the engineering firms to better define and address the marketplace for innovative treatment technology, my office issued this summer a report called, "Cleaning Up the Nation's Waste Sites: Markets and Technology Trends," which describes broadly the opportunities existing in Superfund, RCRA corrective action, underground tanks, as well as the Departments of Defense and Energy markets for soils remediation.

The fact that over 2,000 people have already paid at the National Technical Information Service to buy copies of the report indicates to me a very strong interest in this market information and making sense of this marketplace.

Senator LAUTENBERG. It depends on the price?

Mr. KOVALICK. $17.50, priced right, we think.

We have made several regulatory proposals and changes over the last 2 years to help further the development and application of innovative treatment technologies for soil and groundwater. Most recently, we have proposed under the Resource Conservation and Recovery Act, to raise what is called the treatability testing limit for contaminated soil from its previous 1,000 kg (or three or four drums of soil) up to 10,000 kg. If implemented in the final regulation, this change would lift the permit burden off the developers of new technologies who wish to experiment with them.

These highlights, along with my full statement, indicate our strong commitment to work jointly with others in the context of the Superfund law and increase the availability of less costly and more effective solutions for our site cleanup problems.

Senator LAUTENBERG. Thank you very much.

Mr. Moscatello, you represent an organization in New Jersey. Unfortunately, we have had to find innovative ways of working with problems because our State is beset with Superfund sites in the legacy of our industrial development, but we are very aggressively working in our State to deal with the problems. Between the State and the Federal programs, we're beginning to see some significant advances in terms of the technological development necessary to work with these sites. It is quite a sight to see a chemical plant put in place to get rid of contamination and that which is very threatening. We see the effects in communities.

I'm reminded of one community where the Board of Health issued a warning and that is "when showering, don't raise the temperature too high and leave the window open." So that's not drinking, that's not really the kind of exposure that you would think of normally as being dangerous. They had to replace all household water.

Mr. Moscatello, we are delighted to see you and invite you to give your testimony.

STATEMENT OF HARRY MOSCATELLO, ACCUTECH REMEDIAL SYSTEMS, INC.

Mr. MOSCATELLO. Thank you, Senator, for the opportunity to be here and share with you some of the experience that I've had in developing an innovative technology.

The name of my first is Accutech Remedial Systems. As you indicated, we're based in New Jersey. The cloud of contamination that exists in New Jersey does have somewhat of a silver lining, as you well know. We've been very active in the remediation industry in our State. I can attest that there is a great deal of positive job creation taking place in our very successful efforts in New Jersey to clean up industrial sites that have been contaminated.

Accutech Remedial Systems has been fortunate to be a developmental partner with the New Jersey Institute of Technology, working closely with that institute and bringing to the marketplace a technology known as pneumatic fracturing. We'd like to thank that we are, in fact, breaking new ground in technology development, and indeed, we are.

Our mission with New Jersey Institute of Technology is to bring the pneumatic fracturing technology from the academic setting of a laboratory to the field. I decided to become involved in this venture because we're dealing with the DNAPL problem primarily, that's our focus. As you well know, this is a very common problem at abandoned industrial sites in New Jersey and I suspect throughout the Nation. I know it is a very common problem in the Superfund Program.

I'm happy to report to you that the pneumatic fracturing extraction technology which was accepted in the Superfund SITE Program was successfully demonstrated at an ECRA site in New Jersey last August. We've demonstrated that pneumatic fracturing can be a very positive component of a treatment system in dealing with the DNAPL problem. We've got very good data that has come out of the Superfund Program that proves that it can be tackled and can be remediated to a larger extent than conventional technologies have been able to do.

We believe that the pneumatic fracturing experience that we have had at our demonstration site in New Jersey can be applied to any site successfully where low permeability geological formations present a problem. We've had experience at the Tinker Air Force Base in Oklahoma where a similar type of problem existed. During the summer, we successfully dealt with that problem as well.

I'd like to talk a little bit about my experience with the Site Program and perhaps suggest to you some ways that the Site Program might be enhanced to help technologies get through the demonstration phase and into the market phase and into commercial utilization.

As I mentioned, we were accepted into the Site Program in 1990. We had some difficulty finding a responsible party willing to demonstrate what was perceived to be a very risky and new technology at their site. We had one lined up and as it came close to the time of implementing the technology, the party backed off because the information base was totally nonexistent as to how this was going

to actually perform at a real site with a real contamination problem. I can understand that point of view certainly.

We were fortunate enough in August of 1992 to find a second candidate that was willing to demonstrate the technology. We actually implemented our Superfund SITE Demonstration Program in August of 1992. The data that the site program issued in evaluating our demonstration at the site proved that pneumatic fracturing works. In fact, we were able to increase the air flow rates in combination with the conventional soil vapor extraction system by 18,000 percent. We increased the removal rates by 2,400 percent at that site. This was a site where conventional soil vapor extraction and pump and treat technology was attempted on a pilot scale and failed. After pneumatic fracturing, it has great promise for success.

I want to report to the committee that I don't think our technology would be anywhere today without the rigorous and scientific evaluation of the SITE Program. I think the program is essential to the development of innovative technologies and to the movement of these technologies from the laboratory to the field.

I also want to report that I think more needs to be done to accelerate this movement. We were fortunate to find a demonstration site in which we were able to at least get one site under our belt and prove that the technology indeed works. However, even with the very positive report from the SITE Program from the EPA, a very scientific objective document, users are quite resistant to using innovative technologies at their site. My perception is that many users would rather depend upon a conventional technology and try that and see what happens or worse, do nothing at all and take a very passive approach to the site.

I would like to see the committee consider some kind of an addition to the Site Program whereby if a successful technology is demonstrated in the program and has scientific data indicating its successful application, then in appropriate cases, some kind of cost incentive should be built into the program to encourage the private sector user to further try the technology. One site alone in a site program isn't always enough to build the kind of database and confidence in the technology that the marketplace needs to bring it to commercialization.

I believe an investment of this type need not be significant and it's clear in my experience that the return to the Federal Treasury in savings by introducing more cost effective technologies to the program and perhaps more importantly, in the job-creating potential that these technologies have could be great and could far offset the costs of such a program.

Thank you.

Senator LAUTENBERG. Thank you very much.

Ms. Hankins?

STATEMENT OF DEBORAH HANKINS, MANAGER, REMEDIAL PROJECTS, GENERAL ELECTRIC COMPANY

Ms. HANKINS. Thank you, Mr. Chairman.

I'm Deborah Hankins. I'm testifying today for the General Electric Company. I'm Manager of Remedial Projects for our Corporate Environmental Programs Office in San Francisco, California. I'm

professional engineer and I hold a doctorate in engineering from the University of Washington.

I am the project manager for a number of sites in the Western United States. I'm responsible for managing these sites from the remedial investigation stage through the implementation of remedies. I also oversee research and development programs on groundwater and DNAPLs being conducted by Professor John Cherry at the University of Waterloo who I know has met with the staff.

GE's remedial expenditures over the last three years have ranged from $100 to $125 million per year and it is expected that the company will be spending between $140 to $170 million per year over the next 2 years. That's a lot of money. New technologies could provide less costly and more reliable remedies which in turn would promote more effective cleanups at more sites. For this reason, GE has invested over $30 million in the last 3 years in the research and development of new technologies. In addition, GE has invested $20 million in bioremediation research primarily focused on PCBs.

Ultimately, these research dollars are a good investment if they result in the development and use of innovative technologies that help the Nation achieve Superfund's fundamental goal of expeditious and cost effective reduction of significant actual risks to human health and the environment.

Unfortunately, the current Superfund Program contains several regulatory, technical and cost impediments to the application of innovative technology. Moreover, the current program does not provide meaningful incentives to encourage the development and use of innovative technology.

From my personal experience, regulatory impediments are the most significant road block to innovative technology application. An example that supports my conclusion is the GE Superfund site in Spokane, Washington. That site, I am GE's project manager for. In 1985, we first proposed an innovative technology called in situ vitrification, or ISV. ISV involves inserting electrodes into the ground around contaminated soil and melting the soil; the melting process destroys organic contaminants. The residue is a glass-like substance similar to obsidian rock. The supplier of the technology, Geosafe, submitted an ISV demonstration test plan and permit application to TSCA Headquarters in Washington, DC in August of 1990. GE constructed five test cells on the Spokane site and put in this test cell, 3500 tons of PCB-containing soil, concrete, asphalt, and sealed 55-gallon drums with saturated soil.

The TSCA permit required that we prove destruction efficiency of 99.999 percent for the PCBs. In order to demonstrate that high a destruction efficiency, we had to import PCB material to the site to achieve a concentration of 10,000 ppb. We brought in transformer oil, 73 percent by weight PCBs, mixed it with site soil and placed the spiked soil into the test soil.

In early 1991, while conducting an operational acceptance test of the equipment on uncontaminated soil, an incident occurred and resulted in severe damage to the Geosafe equipment. A one-year investigation that followed determined that the rapid release of water vapor from a sealed drum had caused the event. In May of 1991, EPA, Region X, sent a letter to GE stating that the spiked

soil must be disposed of by October 1991. This was while the equipment investigation was going on.

GE was caught in a regulatory dilemma. We had spent well over $1 million to construct the test cells in preparation for the demonstration tests and here we were told by order of TSCA, Region X, that we were to excavate the soil and dispose of the material in a TSCA landfill. If that had occurred, ISV would never be demonstrated and that was the only way we could see of complying with Region X's requirement.

Further, the State of Washington had banned us from removing any site soil. So here we were threatened with an enforcement action. We turned to EPA Headquarters who issued the permit and asked them to persuade Region X to exercise enforcement discretion and to work with GE and the State to find a solution. EPA Headquarters was unsuccessful.

However, after 6 months, the State of Washington was able to convince Region X to grant a 2-year waiver of the TSCA disposal requirement allowing us to fix the equipment and now we are prepared to go forward with the demonstration test in the spring of this year.

This is an example where a company has done everything correctly but because of an unforseen technology setback, we're facing civil and criminal liability for using an innovative technology. Such experience has discouraged the application of innovative technologies by PRPs. The bottom line is, new technologies are risky. If we want to promote such technologies, we must reduce the regulatory and technical barriers and provide the appropriate incentives and a means of risk sharing between the PRPs and the agencies.

In conclusion, I've listed a number of recommendations in my written statement.

I thank you for your time.

Senator LAUTENBERG. Thank you very much.

Mr. Moscatello, you pointed out the possibility of job creation in the development of technologies. How significant do you think that job creation is?

Mr. MOSCATELLO. Every time that we create a technology, at least in the case of the technology we've created, we've designed it so that it's mobile and it can be put on a system and taken to whatever site it's needed on. The fabrication of that unit alone involves quite a bit of engineering, of course, but the actual fabrication of it creates factory jobs, in addition to the engineering jobs that my firm creates and the field technician jobs that are necessary to implement the technology.

There is also this job-creating fabrication situation where a local factory in New Jersey which had just had a layoff because its traditional product wasn't being demanded, was able to take workers back and put them back on the payroll. I'm a very small company and I'm a very small situation, but I see these spillover effects from the remedial technology industry filtering down to a substantial level in other sectors of our economy and creating jobs in those sectors.

In addition, the technology I'm working with has great potential in teaming up with conventional remediation activities but it's also been pursued by people in the land development industry in one

application that I can recall where the need to increase percolation from septic tanks in residential development was addressed by this technology.

The point I'm making is that just as with the Defense Program and the Space Program, there are spillovers to the general economy that occur that are very positive spillovers. I see the potential as great.

Senator LAUTENBERG. I'm curious about that because we're not talking about, as I see it, manufacturing lots of things but the application thereof, the manufacturing of the equipment looks like it has potential for employment and commerce, but its use is military and we don't employ more service people. But in the case you're talking about with environmental technology and remediation possibilities, it seems to me that if the basic equipment can be successful, then there ought to be lots of opportunities. If we could do these things more cost effectively and quicker, then we'd have lots more people out there doing this.

The field of environmental technology is a very appealing one. The field of removal, of remediation, of treatment, also and there are lots of entries into the business and appropriately so.

Ms. Hankins made reference to the fact the biggest obstacle was government regulation. Mr. Kovalick, how do you feel about that? What can we do to get rid of those regulatory impediments?

Mr. KOVALICK. I've been with other people from GE before, and I certainly agree that there are other anecdotes related particularly to PCBs, which has been a major contaminant of interest of theirs, and the fact that it is regulated under the Toxic Substances and Control Act; none of that anecdote had anything to do with RCRA.

The regulatory barriers that I'm used to addressing, not to say there may not be barriers there, are also in the Resource Conservation and Recovery Act having to do allowing the use of new technology as well. I tend to think that while EPA can improve its processes, and the example she gave sounded more like an administrative than perhaps a statutory correction, that we could do more to emphasize the goal. To me, that's at the heart of this matter. There is no goal in the Superfund law related largely to technology development. We've come at the success of 260 projects and efforts like GE because of their need and our need to lower costs, but there is not a particular direction for technology development either to help firms like Mr. Moscatello's (other than the SITE Program) that should be a part of our effort.

Similarly, in the RCRA law, we're focused on the original purpose, protection of public health and the environment and making sure that waste streams and lately, contaminated soil, do not leave the system and cause more contamination, a prevention program.

Also, the TSCA law and the section she's referring to was not designed as a technology development section. I've been known to say this is kind of like changing the tire on the car while we're driving it; we're doing technology development, but that's not the direction that each of those cars was originally directed toward.

I guess I agree that there are regulatory and administrative improvements that can be made, but I think we also have to think about is this a purpose that we also want those laws to serve? If so,

we could probably do better than changing tires on moving cars. So, we could think about doing it in a more directed way.

I might also add that I would submit Mr. Moscatello's example has to do with acceptance in the engineering community and that is not a trivial matter, whether it's remediation technology, transportation technology, or anything else. There has to be cost and performance data developed. We all, all of us at this table, have an obligation to find out how to get more of that available faster for people to examine.

Senator LAUTENBERG. Mr. Moscatello, do you see regulatory obstacles? There are certainly financial ones, there are certainly efficacy reviews, but I was surprised to hear Ms. Hankins say that the biggest problem was regulation developing new technologies and new techniques.

Mr. MOSCATELLO. Senator, I can't tell you that I've experienced that with the pneumatic fracturing technology per se but in my general business practice, which is heavily oriented toward remediating industrial sites in New Jersey, I suspect we're not that different in New Jersey than we are elsewhere, there is undoubtedly a phenomenon that I characterize as regulatory gridlock in which we are forced to bounce from bureau to bureau to bureau within the regulatory agencies seeking permits to have permission to remediate a site. I do think it deserves some attention. I don't know how extensive the problem is at the Federal Superfund level but it's probably not that different than it is at our level.

Senator LAUTENBERG. There's a lot demanded of a remediation program but again, I wanted to focus on the regulatory obstructions, the significant ones, in developing new technologies. If you want to develop a drug, a product that has to be reviewed by the FDA; since New Jersey is a principal home of the pharmaceutical industry, I talk to lots of people in the business. I can tell you that there is a significant amount of complaints about the length of time.

On the other hand, there are people, especially those who are sick with diseases that people are worried about, they can't move fast enough and heaven forbid that we permit or okay something that then creates more damage than the disease you are trying to treat. So I don't think that is an unusual circumstance. I think the analogy works that when you have something as sensitive as health and ultimately we come back to that, there is a normal caution, normal care that has to be taken with something as complicated and as purposeful as site remediation, site cleansing, and so forth.

I have had people come to me and say this is so simple, all you have to do is pump A, B and C in there and before you know it, it's got microbes or bacteria, just lay down and it's all over. It just doesn't work that way.

You said something, Ms. Hankins, that I must tell you kind of took me by surprise. You talked about the criminal prosecution. If I heard you right, you said for developing or becoming involved in innovative technologies. I don't think those penalties are there because you're involved with innovative technology, it goes way beyond that. You had this unfortunate incident, it happened, but no one says we're not going to experience problems. I don't think

really the company faces criminal risk because they were pursuing a new technology, do you?

Ms. HANKINS. The letter from Region 10 was addressed to me, so I have a very personal interest in it because had criminal charges been brought, I would have been very involved with it personally.

The violation was not destroying PCBs within 1 year; the 1 year would have been accomplished had we been able to perform the demonstration at the time we originally anticipated demonstrating it. Because of equipment failure, we were delayed 2 years. So even though the PCBs were in an engineered test cell, they were weatherproofed, were completely safe and removed from the environment, the regulations stated they still had to be destroyed within one year. There was no way we could accomplish that without digging them up and hauling them off to an incinerator.

There were two other examples. I didn't want to leave you with the impression that the case of Spokane was an isolated example. There are several examples of regulatory instances given in my written statement.

Senator LAUTENBERG. You don't have to repeat them if they are there.

Mr. Kovalick, how can the Government share in some of the risk of trying and encouraging a new cleanup technology development?

Mr. KOVALICK. We don't have a specific proposal from EPA with me today. I know we're in the process, as you know.

Senator LAUTENBERG. Is that something that ought to be considered?

Mr. KOVALICK. I've heard we need to do better than we are in terms of sharing risk, even to the extent of financial risk. I've listed in my testimony and elsewhere that things are being done to change regulations, and we can improve that, but consulting engineers, responsible parties and others think that ought to be a direction we should take.

My comment earlier about the purposes of Superfund is where I come back to, which is if we were to decide that technology development was something we wanted to do in this law, then there is a tension that builds between that and cost recovering every dollar the agency might spend or try to get back at an orphan site or a site where we have some doubt about PRPs. We have some built-in tension.

Senator LAUTENBERG. You have administrative costs generally. We have non-site specific costs that go with managing an enterprise like this.

Mr. KOVALICK. Yes. I agree with that. I just meant that may be subject to some litigation as to whether that's recoverable when we go to recover those costs. Assuming we wanted to have this as a purpose, then we have some models. We've given thought to the idea of a revolving fund or portion that could be devoted to working with PRBs.

Senator LAUTENBERG. Do you or do you not think the Government ought to try to help financially, regulatorily, develop new technologies outside of its own research facilities? Should we go to the private sector and say, whether it's revolving fund grants, or otherwise?

Mr. KOVALICK. We're trying to exercise everything we have within the current law to do that. That's a good thing. We do not have an EPA position and the new Superfund position that the administration will be presenting will have to deal with that question.

Speaking personally, I've heard that need enunciated. It seems to be one we need to meet, but not in the way that conflicts with the other objectives.

Senator LAUTENBERG. Mr. Moscatello? You almost said so in your testimony. I'm giving you a second chance.

Mr. MOSCATELLO. Senator, I appreciate that and I'll try to hit a home run. There is no doubt in my mind that a reasonable investment as an add-on to the efforts already undertaken in the SITE Program, would make sense and would return back to the Government, job creation, tax revenues and newer focused export potential, a very, very substantial return on that, say nothing of the enhancement of our own remediation efforts and the positive health impact that has. There's no doubt in my mind.

Senator LAUTENBERG. Ms. Hankins, you're a person with a technical background. Can you see putting more energy, more resource into the development of new technologies?

Ms. HANKINS. Absolutely. We totally support that.

Senator LAUTENBERG. Mr. Moscatello, has the Government cooperated with you in the development of your process?

Mr. MOSCATELLO. When I went out to Cincinnati with the inventor of the technology, a professor from NJIT, and the reception at the EPA office in Cincinnati that reviews new applications to the SITE Program, was 100 percent positive. They moved us into the program quickly because they saw the wide application of pneumatic fracturing to the many of the DNAPL problems they were facing. So without that, it was a positive experience at the Federal level.

The management of the program at the field level was very objective, very scientific, and very appropriate. The applications report which was just released I thought was a very fair and balanced document. I've got to give the SITE Program very high marks for what they've done.

The State of New Jersey was kind of neutral at the regulatory level in their approach. They didn't get in our way, they didn't do too much to really help either. I was a little disappointed in that.

I'm real excited about the concept of a partnership between a small entrepreneurial firm like mine and, to a certain extent, the Federal Government and an academic institution. That is a very exciting concept. I think the direction of job growth in our country is going to come out of efforts like this. I think new technologies have and will continue to come out of efforts like this.

What I'd like to see is a little bit more help in getting through that hourglass where you've done your site demonstration, you know you've got a good product and you know it works, and getting out to the users, not so much people like GE, they've got enough sophistication to see the positive worth in it, but the less sophisticated, responsible parties out there making decisions about remediation who need to have a little bit of a carrot to pull them in this direction. Otherwise, they'll go the path of least resistance.

Senator LAUTENBERG. Ms. Hankins, do you believe GE and the other industrials, PRPs, are interested in getting into a partnership with the Federal Government to move these innovative technologies into commercial use faster?

Ms. HANKINS. Absolutely.

Senator LAUTENBERG. What might you expect by way of participation by the Federal Government?

Ms. HANKINS. In my written statement, I address that issue. Part of it is being able to demonstrate these technologies on Government sites. That's something the Government can contribute at essentially no cost to themselves. It gets us away from the risk of doing it at the PRP site where again, administrative requirements, which have nothing to do with health and safety, might dissuade us from otherwise trying that innovative technology there.

Senator LAUTENBERG. Mr. Kovalick, does that sound like a good idea?

Mr. KOVALICK. That's exactly what we're doing at McClellan Air Force Base and hope to be doing at several other Federal facilities. Even though we don't have a direction in the law, it's a direction we think makes sense.

Senator LAUTENBERG. Mr. Moscatello, how soon do you think we can clean up the DNAPL contamination in groundwater through some innovative technology? It's a serious problem we all know.

Mr. MOSCATELLO. I don't think I can give you a finite answer to that question.

Senator LAUTENBERG. Is it a reasonable expectation?

Mr. MOSCATELLO. I think we can do better than to ignore it and encapsulate it and monitor it. I think in order to get out of the DNAPL problem, we've got to be able to access the contaminants. I think one of the reasons why the EPA was interested in pneumatic fracturing is that it holds promise to be able to gain that access and enable the more conventional bioremediation technologies, bioventing technologies and conventional pump and treat technologies to take over. I think we can do far better than we've done.

Senator LAUTENBERG. Ms. Hankins, I understand that AT&T recently had some success in finding a better way to clean up DNAPLs. Do you know what they've come up with?

Ms. HANKINS. I'm not familiar with that specific one but as I say, I oversee the research that done by Dr. Cherry at the University of Waterloo on DNAPLs. That is where I'm headed next week on the six month review of that program. I think it's safe to say that we will do better at DNAPL sites with innovative technologies. As to whether we will actually achieve the final cleanup standards, that has yet to be proven.

Senator LAUTENBERG. "Do better" meaning move the cleanup process along? Do you have any kind of period of time during which you think this development can take place to where it has significant commercial use or application?

Ms. HANKINS. I don't think there is sufficient data which has been generated at this point to make a time estimate.

Senator LAUTENBERG. Is there enough evidence around to say that there are programs under consideration that will work or is it still too early?

Ms. HANKINS. The panelist before me mentioned a process by Environmental, a passive-reactive system that you install in the groundwater plume and it passively treats the groundwater, an alternative to pump and treat. It destroys the contaminants and dechlorinates them. That holds a lot of promise. We are implementing that on a site, GE is implementing it on a site in California. That, to me, holds the most promise in terms of innovative technologies for DNAPL plumes at this point in time.

Senator LAUTENBERG. Your company has a real incentive to develop things. It's a responsible company and they want to do things that help the country, helps society in general and they also are pretty aggressive business people. I think if they find a way to develop a product that has some commercial use, they wouldn't be adverse to that. Also, you have the other giant pebble in your shoes, $150 million a year, $125 million, that's a pretty good incentive.

Mr. Kovalick, can you tell us something about the conclusions of a recent NATO report that talked about treatment remedies, permanent treatment remedies?

Mr. KOVALICK. Yes. We've been working with other largely western European countries in the period of 1986 to 1991 and published together a report on sharing information with one another on 29 projects that the countries were working on together. The report is largely an overview of the possibilities for technology development and is optimistic about some of the thermal processes, both incineration and thermal desorption, talks about soil vapor extraction being a viable technology in all the countries' views, which it certainly is in the United States where we're using it extensively, is very hopeful about some physical chemical processes and also is hopeful about bioremediation.

The general sense of the report is that there is a lot of application work underway, and I'm proud to say I think we are doing more of the whole suite of technologies in the United States than any other single country is with whom we share information.

We are now in a second phase. These projects run under the Committee for Challenges to a Modern Society in 5-year increments. We're in our second 5-year period, and we've begun to share projects again. I see some further progress among the countries.

The report overall says that for some kinds of technologies, we're well along the development curve and in a couple of others, we need to get along a lot faster. I think in the United States, we're quite well up that curve, but maybe not the application curve that Mr. Moscatello is talking about.

Senator LAUTENBERG. Is there a general conclusion that permanent solutions are the preferable position?

Mr. KOVALICK. Yes, exactly. Permanent solutions are preferred. I might also add that integrated solutions having more than one technology on a site are often necessary, such as the example that Mr. Moscatello gave, and that there is a continuing need to develop these technologies.

Senator LAUTENBERG. That concludes the hearing.

[Whereupon, at 12:33 p.m., the subcommittee was recessed, to reconvene at the call of the Chair.]

[Statements submitted for the record follow:]

HAZARDOUS WASTE TREATMENT COUNCIL

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TESTIMONY

RICHARD C. FORTUNA
EXECUTIVE DIRECTOR
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ON

SUPERFUND REAUTHORIZATION: THE ROLE OF TECHNOLOGY AND PERMANENT REMEDIES

BEFORE

SUBCOMMITTEE ON SUPERFUND, RECYCLING AND SOLID WASTE MANAGEMENT
ENVIRONMENT AND PUBLIC WORKS COMMITTEE
U.S. SENATE

September 30, 1993

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I. BACKGROUND ON THE HAZARDOUS WASTE TREATMENT COUNCIL

Chairman Lautenberg, Senator Durenberger, Members of the Environment Committee, I am Richard C. Fortuna, Executive Director of the Hazardous Waste Treatment Council ("HWTC"). The HWTC is the nation's largest association of technology-based firms committed to stringent controls on the daily management of hazardous waste and the permanent cleanup of Superfund sites. At the same time, we represent firms that find themselves on both sides of the cleanup and liability equation. As such we have an interest in the proper operation of all program elements.

In addition to being the industry leader in the legislative reforms of RCRA and Superfund, the HWTC has conducted numerous studies of Superfund implementation and will be releasing two additional reports on the scope of Superfund site damages to groundwater and natural resources in the near future. We have also endeavored to implement necessary changes to the full spectrum of hazardous waste regulatory activities including defining the scope of RCRA coverage, sham recycling, land disposal restrictions, facility permitting, federal/state relationships, and permanent cleanup of the nation's problem waste disposal sites. I welcome the opportunity to appear this morning and thank the Committee for calling this important hearing on the role of technology and permanent remedies in securing proper cleanup of Superfund sites.

II. OVERVIEW

While all parties associated with this program can identify their favorite area of program failure, few would argue that the greatest tragedy of this program would be if this Committee had to hold a hearing in 1998 on why the remedies of 1993 have gone bad. To continue throwing good money after bad and to continue to expose citizens through sites that were supposed to be abated would unquestionably be the worst failure this program could have. That is what SARA's permanent remedy directive and treatment technology preferences were intended to avoid, and they have begun to deliver on their promise. As a result of these two directives: diversity of technologies has increased, the unit cost of technology utilization had decreased in many cases by more than 200%, and new technologies that did not even exist in 1986 are now establishing themselves as viable and effective alternative methods for management. None of these developments and advances would have occurred had it not been for the SARA amendments that have: (1) secured a market for something other than cap/contain and land disposal, and that (2) rewarded excellence in terms of technology effectiveness and cost.

The premise that we must choose between either treating everything, or treat nothing and merely rely on cap and containment is a false and mis-leading one. First, the existing provisions do not require that everything be treated. Secondly, to rely solely on cap and containment as the lead strategy for Superfund cleanup is the

defacto declaration of environmental dead zones whenever the strategy is employed. Bridging the differing expectations and competing interest regarding the performance of the Superfund program lies not in altering SARA's permanent remedy or treatment requirements. The choice is not now and should not be an all or none option. Rather, we must develop a system that focuses the use of our technology on the worst parts of the worst sites, and which reserves greater flexibility to deal with areas of lesser contamination under a less prescriptive scheme. This compromise, or "hot spots strategy" has been developed by a working group under the EPA. For the first time in the 13 year history of this program multiparty agreement on revision to Superfund cleanup policy has been developed. We commend this approach to the committee for its review and consideration as the most useful mechanism for advancing Superfund reauthorization debate along the most rational line.

Moreover, the liability provisions of Superfund are essential to ensure both proper cleanup and the prevention of future Superfund sites. If Superfund's liability provisions are eliminated, several untoward results will ensue: the incentives for private parties to assist in identifying other contributors will be eliminated; the number of sites being cleaned up and the funds available for remediation will be inadequate; the underpinnings of a private market mechanism for firms to voluntarily cleanup and internalize liability will be eliminated, a major impetus for preventive management will be lost; and, there will be no hedge against excess exploitation of existing regulatory loopholes.

III. A PERSPECTIVE ON THE CHALLENGES OF THE SUPERFUND PROGRAM

Having been associated with the origins and reauthorization of this program since 1979 and its implementation ever since and as one who has been most critical of its course of implementation since Day One, I can certainly attest to the fact that this program often appears to be one that only a mother could love. That said, however, I think some fundamental points must be recognized before we simply throw our hands up and say that the problem can never be solved, or begin declaring "environmental dead zones" across the country. Toward that end I offer the following observations:

- The attempts to politicize Superfund during its early 1980s cost us dearly in terms of vital experience that we needed to begin to direct this program. Neither of the previous administrations devoted any intellectual energy or political capital to solve these problems and frequently just the opposite.

- The task of cleaning up heavily contaminated sites is unprecedented and cannot be compared to any other environmental program. Cleaning up Superfund sites is the environmental equivalent of trying to put Humpty

Dumpty back together again--after 50 years. The problems we face at these sites is unparalleled in terms of difficulty, magnitude and uncertainty.

- We are writing the book on cleanups at the same that we are reading it. No manual exists to guide us through the cleanup process. The period we should have been using between 1980 and 1988 to begin writing that book was largely lost.

- Even at its best, under whatever scheme we look at, site cleanups are imperfect, difficult, and unsatisfying for all parties involved. Even at an orphan site where the federal government has taken the lead and has not had to deal with the transaction problems associated with responsible parties, the cleanups have not proceeded easily.

In many respects the program is on the verge of being given its last chance, even though it has never had a real first chance. While the current Superfund program certainly could benefit from a number of mid-course corrections, the fundamental principles upon which the current program is based can be likened to Winston Churchill's observation regarding democracy: "It's a rotten form of government, except when you compare it to all of the rest". For the first time in the 12 year history of this program we have two things working together that we've never had before: a willingness to solve the problem, and knowledge about what will work and what won't.

IV. THE IMPORTANCE OF SARA'S PERMANENT REMEDY DIRECTIVE: RECENT FINDINGS ON THE ROLE OF TECHNOLOGY AT SITE REMEDIES

A. SARA's Permanent Remedy Directive Is The Cornerstone Of Technology-Based Cleanups

This Committee and the Congress spent the better part of three years reauthorizing the Superfund law by enacting the Superfund Amendment and Reauthorization Act of 1986 (SARA). While expectations for the program differ, few can question the significance of SARA's fundamental changes to the remedy selection process, and its emphasis on permanent remedy and national uniform cleanup standards. If the 1986 SARA reforms stand for nothing else, it is to put an end to the shell game of Superfund cleanups; cleanups that merely perpetuate and propagate new sites by attempting to cap and contain dump sites, rather than instituting permanent technology-based remedies. In addition, since cost is no longer the sole or dominant criteria in remedy selection, under SARA, the Agency must first determine the appropriate level of environmental protection to be achieved and then select a cost-effective means of achieving that end.

We supported SARA because of our commitment to stopping the Superfund shell game and ensuring that "cleanup" occurred properly in the first instance, rather than simply propagating increasingly more expensive cleanups that repeat the same fundamental mistake: over-reliance on capping and containment. Without this directive in place, the role of technology in cleanups will diminish if not disappear, and a new generation of Superfund sites will be born.

B. Summary Of Recent Cleanup Decisions -- The Beginning Of Progress

Our joint review of the FY 1988 Records Of Decision marked an improvement in EPA's remedy selection process over 1987. Our joint report, with the environmental community, entitled "Tracking Superfund," revealed that 52% of the 150 Records of Decision (ROD) in FY 1988 involve the use of treatment technologies as a component of the remedy. This is in contrast to only 32% of the RODs in FY 1987 involving the use of any treatment technologies (i.e., 24% using partial treatment and 8% using treatment to the maximum extent practical). Our review of FY 1990 RODs reinforces this positive trend, with slightly more than half of the FY 1990 RODs reflecting the use of treatment technology as a significant component of the ROD. The Agency estimates that 72% of the FY 1988 RODs involve the use of treatment. The majority of this discrepancy was due to the fact that EPA has included in this category sites that employ organic stabilization; a technique that has never been demonstrated and even refuted by several SITE program demonstrations. There is also considerable variability among the EPA regions in the extent to which they use treatment. Preliminary analysis reveals that 25%-72% of all sites involved the use of treatment technology depending on which EPA region was surveyed. This again points to the need for headquarters oversight to ensure consistency of the program.

Despite this modest sign of progress, there remains a disturbing number of indefensible remedies that completely ignore the permanent remedy and cleanup criteria of the 1986 Amendments in favor of capping and containment, bogus technologies and/or are decisions controlled solely by cost. Examples of this inappropriate reliance on capping and containment are typified by the BF Goodrich Site in Calvert City, Kentucky and Yaworski Lagoon Site in Canterbury Township, Connecticut. At BF Goodrich, lagoons containing high concentrations of organic contaminants are slated to be merely capped and contained after excavation of minor amounts of contaminated soils. Such high levels of organic contaminants will remain within the facility that the cap is specifically designed to enhance vapor recovery. The Yaworski Lagoon Site is a similar situation. A lagoon with high concentrations of solvents, other halogenated organic and heavy metal wastes is scheduled for a cap and contain remedy despite the fact that this facility is on the bank of a river that floods frequently.

In addition to revealing trends in remedy selection and the role of various factors in the decision-making process, the review of FY 1988 RODs also points out several remaining weaknesses in the nation's other hazardous waste statute, the Resource Conservation and Recovery Act (RCRA) -- the statute that is intended to prevent the creation of additional Superfund sites by controlling current solid and hazardous waste management practices. In reviewing the FY 1988 RODs and the most recently-proposed additions to the National Priority List of Superfund sites, it is clear that sanitary landfills and hazardous waste recycling facilities in general comprise two of the leading, if not the largest, sources of additional Superfund sites. Of the 150 FY 1988 RODs, 27 were sanitary landfills and 20 were "recycling" sites. Of the recent proposed additions to the NPL, 14 were recycling facilities. The failure to pose meaningful preventive controls at sanitary landfill sites in form of either liners systems or restrictions on disposal, and the general policy of exempting hazardous waste recycling from Subtitle C standards that otherwise apply to TSDFs, are the principal reasons this new generation of Superfund sites.

The policy of exempting these facilities from preventive controls has, and will continue to add to the burden of problem sites unless and until the proper controls are imposed on these facilities. It should be clear that these issues that demand the priority attention in the upcoming RCRA reauthorization. While we cannot reverse the course of past practices, the ultimate environmental insult is the fact that the law intend to prevent the creation of Superfund sites is in fact the leading cause of new ones.

C. Capping and Containment Is A Default Option, Not A Cleanup Strategy. Technology Cannot Be Stimulated By Being Shelved.

1. "Cap and Contain" Sanctions The Creation of Environmental "Dead Zones"

In recent testimony before this Committee and elsewhere, industry witnesses have tacitly or explicitly endorsed a cleanup policy for Superfund sites that relies primarily on "capping or containment," or "stabilization" of Superfund sites generally. According to this theory, due to the uncertainties of assessing site risks and/or due to the unavailability of suitable technologies to remediate Superfund sites generally, and/or due to the "high" cost of the technologies that are available, we should simply contain these sites until the appropriate technology "comes along" to address these problems in a "cost-effective" manner.

At best, a "cap and contain" strategy allows the perfect to be the enemy of the good. At worst, it affirms a "dead zone" approach to environmental cleanup that essentially writes off contaminated areas from ever being useful resources again, in turn transferring the uncertainties and burdens to future generations. The plain fact of

the matter is that capping in most circumstances is a temporary solution that is destined to fail. In many sites, capping is simply not feasible and/or the maintenance requirements would be so intensive as to render the solution inviable for a wide range of site contamination situations. The very reason we have many of our Superfund sites is because capping and containment did not work in the first instance.

Previous testimony presented before this Committee by the Natural Resource Defense Council reveals that many caps currently in place have already failed. The list that follows identifies other NPL sites where capping was considered, but rejected for a wide variety of feasibility and reliability reasons. In short, "capping and containment" or "stabilization" of a site needs to be viewed as any other unit operation. That is, capping and containment should be viewed as appropriate where other options are either deemed to be infeasible for technological or other reasons, or where low risk material is involved such that capping would not present a significant risk when the cap is breached.

The following NPL sites examples provide a spectrum of bases for rejection of "cap and contain" remedies.

- **Aidex Corp., Iowa**: Spills of pesticides including atrazine, aldrin and chlordane resulted in soil, groundwater and surface water contamination at this rural Iowa site, which lies over an alluvial aquifer and in the Missouri River floodplain. Over 3,400 drums of pesticide wastes were stored in open areas on site, and several burial trenches were discovered as well. In addition, following an explosion of liquid pesticides, much of the surrounding soil and sediment was contaminated with runoff from the water used to extinguish the fire and several "hot spots" resulted. The site managers chose not to employ a cap at this site because, "it is a technically inferior solution," and "the future use of the site will be severely restricted and the possibility of inadvertent intrusion into an area of high pesticide concentration will continue to exist. The cap is unlikely to remain completely intact due to burrowing animals who will provide a path for local infiltration." (RI/FS 12/31/83, pg. 4-29). For the sites of high contamination at the burial trenches the ROD states, "Even shallow earthwork could inadvertently penetrate the trench, exposing workers to potentially lethal amounts of a highly toxic material."

  The managers of the site felt confident that by addressing the site through treatment, rather than capping, they would be able to regain the land as a functional industrial area.

Several industrial operations have already expressed interest in purchasing the site. Aidex is scheduled to be deleted from the NPL within the next few months.

- **Clark Fork Sites, Montana**: Soils, sediments, groundwater and air have all been contaminated with heavy metals including arsenic, cadmium, lead, mercury and beryllium in this mining community. The site covers hundreds of square miles and includes a large segment of the Clark Fork River as well as Butte and several smaller towns. The size and scope of contamination at this mining site make it unlikely that a containment approach could be successfully used throughout the site. Much of the contamination in the towns of Butte and Anaconda are in residential and industrial areas that would be virtually impossible to close off from public use. In addition, hundreds of miles of streambeds and banks have been contaminated with mine tailings; it is technically infeasible to use containment mechanisms in this situation because of constant contact with surface water, potential flooding and the possibility of perpetuating heavy metal leaching cycles. Due to the value of the groundwater resource in this arid western climate, failure of containment systems could have severe consequences for the affected populations.

- **Brio Refinery, Texas**: Located twenty miles southeast of Houston, Texas, the Brio Refining site is 58 acres containing roughly 200,000 cubic yards of contaminated pit and subsurface soils associated with 24 different pits with at least another half a million cubic yards of contaminated soil. The highest concentration of VOCs found in the pits was 245,000 ppm of 1,2-dichloroethane. Trichloroethane was found in the subsoils at levels as high as 918 ppm. The evaluation of cap and containment found that long term maintenance and monitoring would be necessary making the long term effectiveness minimal. It also found that volume would be increased due to stabilization while toxicity would not be reduced. With the exception of "no action", cap and containment was rated most likely to fail due to the potential for leaching.

- **Keefe Environmental Services, New Hampshire**: Keefe, a chemical waste storage facility, consisted of a drum storage area, large storage tanks and a 700,000 gallon

lagoon. Residential wells have been impacted. The overflow of the lagoon led to an emergency removal action and the drums and barrels have been removed. Because the sources of contamination were liquid and containers above ground, cap and containment was not a viable option.

- **Yaworski Lagoon Site, Connecticut**: Yaworski is a backfilled lagoon which received sludges and drums of solvents, paints, acids, resins and other materials. It is in the meander loop of a river and above shallow groundwater. The site is capped with a surrounding dike to prevent recharge and is regularly checked for animals burrowing and vegetation. However, this maintenance has not prevented migration of lagoon contaminants, which are presently flowing in the groundwater under the river and elevated levels of benzene and nitrate have been found in a monitoring well on the other side of the river. ACLs are still being developed in order to push for corrective actions. Two weeks ago, EPA announced that the owner of nearby corn field agreed to abandon his crops rather than test them for contamination.

- **Davis Liquid Waste, Rhode Island**: Located in rural Rhode Island, the site consists of 25,000 cubic yards of raw waste and contaminated soil. The wastes dumped here include oily wastes, sludges, solvents, chemicals, fly ash, metals and lab pharmaceutical. The cap and containment option was eliminated in the initial screening of remedial alternatives because of the assumption that land disposal alternatives were likely to fail in the future leading to future costs and long-term management including the future reduction of volume, toxicity and mobility. The ingestion of well water with the maximum levels of contamination over a lifetime leads to an excess cancer risk of 1 in a 1000.

D. As a Result of SARA's Permanent Remedy Directive, Technology Is Decreasing In Cost, And Increasing In Diversity

As a result of SARA's permanent remedy directive and technology preference, the diversity of and competition between commercially-available technologies has grown dramatically, and the unit cost of such treatment has dropped across the board since 1986. SARA's permanent remedy directive indeed has been the engine behind

technology development. For PRPs, there has to be something more than good intentions to ensure that today's "cleanups" do not merely mask the creation of our next generation of Superfund sites. For cleanup firms to risk their capital, their time, their resources and their reputations on technology development, they have to know that there is a market in which they can find there niche and compete. SARA's permanent remedy and technology preferences accomplish both of these objectives.

A technology developer has to know that excellence (i.e., better performance, lower cost) will be rewarded, not shelved. We have learned this lesson over and over again throughout the history of environmental programs in this country. Most recently, the Clean Air Act reforms mandate toxic emission reductions in accordance with the performance of best available technology. The RCRA amendments of 1984 recognize that until the statute stimulated technology utilization and innovation, we would not move away from excessive reliance on the very forms of land disposal that created the vast majority of the nation's Superfund sites. And lastly, under the Clean Water Act the best available technology directive has been the driving force behind virtually all the environmental gains that have been derived.

There is no other preventive or curative program in the history of this country, be it in infectious diseases, highway safety, or passive restraints for automobiles, where we simply shelved the problem and waited for technology. Moreover, every place where technology has been employed to solve a problem, that progress has been made in increments, not in quantum leaps. It is through trial and error, and testing and refinement, that progress is made. If we simply shelve technology now and expect that 15 years from now magic solutions will merge, we are kidding ourselves. We will , in effect, tacitly endorse a policy of environmental dead zone creation in the name of Superfund cleanup. We will revert back to the early years of this program when technology development should have been occurring, but was stifled due to inattention to meaningful solutions.

Virtually every group associated with the program can point to a specific site as an example of program dysfunction. We can point to the numerous instances where sites were inappropriately capped despite SARA's permanent remedy and technology preferences. PRPs can point to individual sites where the treatment component is arguably excessive. However, what cannot be argued is that since SARA's 1986 policies on permanence and treatment were put into place, unit costs have come down, the diversity of technologies has grown and methods that did not even exist in 1986 have emerged to make major advances in the effectiveness and protectiveness of site cleanup. No single narrative standard for site cleanup can preclude implementation misinterpretations or differences of opinion. In truth, bridging the gap between differing expectations of "cleanup" lies not with the permanent remedy or

technology preferences, but with the cleanup standards themselves. The choice is not between complete treatment and no treatment (i.e. cap/contain), but rather in determining how we stratify or align the levels of cleanup with the risks presented by different units at a site. See Section V for further discussion.

The following is a summary of the trends of treatment costs since 1986 across the four major categories of commercialized technology: thermal destruction, biotreatment, soil and vapor extraction, and stabilization. Other technologies such as soil washing, thermal desorption, solvent extraction and UV ozonation are rapidly emerging technologies, but have yet to establish a clear market profile or pricing trend.

Profile of Cost Trends For Commercialized Technologies

	1986		1993	
	5-50,000 tons	50,000 tons+	5,50,000 ton	50,000 tons+
Thermal Destruction	$400-600	$200-300	$225-275	$100-130
Slurry Phase Biotreatment	--	--	175-200	125-150
Landfarming Biotreatment	50-90	50-90	50-90	50-90
Solvent Vapor Extraction	--	--	30-60	30-60
Chemical Stabilization	80	80	30-50	30-50
Land Disposal	300	300	150-200	150-200

E. Other Impediments To Technology Development At Superfund Sites

In addition to the inconsistent application of SARA's directive to use permanent use treatment to the maximum extent practicable, a series of other administrative and policy decisions of the program have impacted the use of technology:

- **no central oversight of cleanup decisions:** The Agency still has no mechanism placed to review, coordinate or oversee the cleanup decisions made by the ten different EPA regions. A program such as this will always require a

high degree of decentralization. Nevertheless Headquarters must exercise an oversight and coordination role to ensure that all proposed remedies meet both the statutory requirements and the policy of the Administration. Failure to do so has resulted in a preponderance of cap and contain remedies, many of which are unjustified. The role of Headquarters should not be to second guess every regional decision, but rather to be there to question if not challenge decisions that clearly fail to meet the goals of the program or that overlooked vital information that has been derived from cleanups in other regions.

- **the failure to establish standardized remedies for certain sites:** Despite having twelve years of experience with this program, the Agency is only now beginning to develop standardized remedies for similar site cleanups. For example, a pentachlorophenol wood preserving site cleanup, in one part of the country is very much like that at another. While the exact scope of contamination may vary, the options available to deal with such sites are almost identical from one site to the next. We need to begin developing more standardized remedy packages for these and other types of sites.

- **risk averaging, and the need to address hot spots:** A recent trend in site assessment has been to average the risks presented by a given site by looking at both the "hot spots" as well as the full extent of contamination and developing an aggregate risk number. The risk evaluation or assessment is often the key criteria in deciding the scope and type of cleanup. This risk-averaging approach tends to dwarf the significance of high contamination which would otherwise require a technology based solution, in favor of a more generalized cap and contain remedy. This approach has recently come under criticism by SAB's Science Advisory Board. The draft SAB review of EPA's risk assessment guidance has found that risk averaging at Superfund sites may underestimate the actual exposure to people at "hot spots" where toxic concentrations are well above the average. While one site sample should not skew an entire cleanup, clearly the principle area of contamination may often need to be treated differently and more intensively than other areas of lesser contamination.

- **The need for demonstration sites:** One of the principle impediments to the investigation and development of new technologies has been that existing governmental programs are often tangential, if not irrelevant, to the remedy selection process. Unless the governmental review and evaluation process is in some way linked to consideration and/or selection of that technology at subsequent remedial actions, the governmental programs will be considered irrelevant and innovation will be further deterred. The technology developer needs to know that there is a connection between the evaluation of the technologies effectiveness and its actual selection in the field at some future point.

V. A "HOT SPOTS" STRATEGY IS THE BEST WAY TO BALANCE ENVIRONMENTAL NEEDS AND RESOURCE CONSTRAINTS

While some parties have attempted to frame the debate on Superfund cleanup strategies as a choice between the status quo, and merely "stabilizing" the vast majority of all Superfund sites, the situation need not be cast as such an all or none choice. The Committee is aware that EPA has commissioned a multi-party Working Group on Contaminated Media in an attempt to develop a consensus on how site remediation should be approached in this country. This approach has included members of the environmental community, ourselves, industry, state agencies and EPA headquarters and regions. After eight months of arduous negotiation a new strategy has emerged from the work group that has the potential to focus and optimize our approach to site remediation. This strategy represents the first multi-party compromise on a revised approach to Superfund policy in the 13 year history of this program.

In short, the approach is called a "hot-spots" strategy that attempts to focus the vast majority of our energies and efforts on the worst parts of the worst sites through technology-based methods of toxicity reduction, while giving the states, EPA and PRPs considerable flexibility to deal with areas of lower level contamination at such sites. Source material that is so highly contaminated that it simply cannot be allowed to remain in place must be dealt with through technology-based methods and mandated levels of reduction. The theory behind this approach has been endorsed by the state representatives, EPA, the environmental community, ourselves and some industry groups, and is currently serving as the basis for development of a formal rulemaking under the Resource Conservation and Recovery Act.

This new strategy distinguishes between higher level and lower level contaminated media according to a "bright line". This "bright line" would be set at a high level in order to distinguish "hot spots" from all other low level contaminated

media. A "hot spot" would be defined as any area of contamination where the concentration met or exceeded a 10^{-3} (i.e. 1/1000) cancer risk or its equivalent. The threshold for a "hot spot" was deliberately set at such an acute level to focus the most intensive remediation efforts on those parts of a site that most parties would agree require remediation, not capping. Lower level media would be managed according to the requirements of the agency overseeing the remediation activities at that site (i.e., the authorized state or EPA). Setting requirements for the lower level media would be left to the discretion of that agency, which could draw on aspects of their own state programs, as well as Subtitle C, D, and I for managing these wastes. Higher level media would follow a technology-based approach via mandated toxicity reduction targets (i.e. 90-95%) while retaining flexibility by allowing for a variety of approved technologies. In effect, this approach attempts to combine the best of both approaches to site remediation (i.e., technology requirements, risk-based levels) by mandating technology-based methods and reduction targets for clearly toxic "hot spots" while reserving flexibility to use more risk-based approaches, and their attendant uncertainty, on areas of the site where a misjudgment would be less severe. Preliminary assessment is that this line would be high enough that approximately 20% of the universe of contaminated media would fall above the line, leaving 80% below the line.

VI. SUPERFUND'S LIABILITY PROVISION IS ESSENTIAL TO ENSURE CLEANUP, PREVENTION OF LEAKING SITES, AND TECHNOLOGY DEVELOPMENT

A. The Importance Of Liability

1. Legislative Background

Superfund's joint, strict and several liability provisions have come under increasing attack in recent months. Depending upon whose position is being articulated, the liability provisions are either the source of all Superfund problems, or are the cause of horrendous and unnecessary "transaction costs". Before commenting on the need for the liability provisions, I believe it would be useful to review the record of the 1980 legislation to determine exactly why Superfund contains the joint, strict and several approach to liability for environmental releases of hazardous constituents.

First, it is important to understand the task at hand. We are effectively trying to put the quicksilver back into the thermometer after 45 years of post-World War II industrial excess and in some cases after 150 years of unbridled industrial revolution. No matter who pays, in what proportion and over what period of time this task is by its

very nature lengthy, unpleasant and inequitable -- since after all these years it is virtually impossible to establish absolute equity to the satisfaction of every involved party, including the unfortunate citizens living on or near these sites.

Second, the liability provisions of Superfund were never intended to right all wrongs and make the process of allocating responsibilities for these cleanups painless. Rather, the liability provisions had one basic purpose: to get as many responsible parties as possible out of the weeds and up to the bargaining table.

Joint, strict and several liability ensures that the parties who caused or contributed to the pollution at the site either fund those cleanups, and/or repay monies spent out of the fund for such purposes. Very simply, "strict" liability means that a company is held liable without regard to fault due the ultrahazardous nature of the activity. This same principle under common law applies to activities such as: transporters of hazardous materials, dynamite manufacturers, roadway blasting, and other entities that engage in abnormally dangerous activities.[1] Thus, simply because a practice a company was engaged in was legal in the 1950s, does not alleviate that company from responsibility for the damages now being caused by that practice. After all, if that company is not responsible for the ensuing damages who should be, the citizens, the state, all the taxpayers in general?

The term "joint" means that any group of responsible parties can be held collectively liable, and the term "several" means any one of those generators could be held liable for the entire cost of cleanup. It is the "several" aspect of joint strict and several liability that has been both the most controversial, and the most useful because this concept allows the Agency to assign liability without having to apportion it precisely. If generators knew that EPA could only assign liability in exact portion to an individual company's contribution, they would have no incentive to come forward and claim or identify their share or to assist in the identification of other potential responsible parties. Rather, they would have the incentive to "lay in the weeds" and have the government come get them. Without "several" liability, the government would have the almost impossible job of establishing the exact proportion of all contributions, and would be open to challenge at every turn by every responsible party. The fear of "several" liability provides generators every incentive to come forward, identify their share and assist the government in doing the same with other parties.

On the other hand, carried to its extreme, if only one responsible party is identified, they can be held liable for the entirety of the site even if their contribution may be minuscule. While in theory this threat exists, it has never been invoked in that

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[1] For example, in Branch v. Western Petroleum, 657 F.2d 267 (Utah 1982), a company storing toxic oil drilling wastewaters was held strictly liable for pollution of nearby landowners' wells.

manner. Moreover, the courts have exercised their equitable powers in ensuring a rough approximation between a generators liability and its contribution to the site.[2] In short, the principle of "joint, strict and several" liability provides both a basis to identify responsible parties, to secure their contribution to cleanup and to motivate them to assist the Agency by bringing other potentially responsible parties (PRPs) to the negotiating table.

2. The Incentive For Private Parties To Assist In Identifying Other Contributors Will Be Destroyed If Liability Is Eliminated

Liability ensures that responsible parties will find it in their own interest to identify other parties, rather than force the government to both identify and then allocate and apportion responsibility for their share of the costs. If the government were to have the sole burden of identifying each and every party and then apportioning the costs and responsibilities for cleanup, companies would undoubtedly see it in their interest to simply sit back and wait to be discovered, rather than come forward and assist the government in identifying other parties.

Only if a company knows it may be saddled with the entire cleanup will it find the motivation to come forward at all, let alone to begin identifying other responsible parties. Without the assistance of joint, strict and several liability EPA will assume a monumental investigative and evidentiary burden that will undoubtedly slow the pace of cleanup, if not bring the program to a virtual halt.

3. Absence Of A Liability Provision Will Limit The Number of Cleanups And Ensure Inadequate Funding For The Growing Number Of Problem Sites

If Superfund's liability provision is eliminated, so to is the ability of the government to engage in either cost recovery actions against responsible parties or to force responsible parties to fund cleanups directly. The liability provision allows the government to preserve the fund for those sites where responsible parties cannot be found. If direct responsible party contributions to the cleanup effort were unavailable, then only a fraction of the cleanups currently being conducted would occur. It is highly unlikely that any new tax will be instituted to match the size of the current private party contributions to the cleanup effort. In addition, the quality of cleanups conducted under such a capped or limited fund would likely emphasize cost over quality and permanence of the remedy. At present, the needs of the site are objectively assessed and then the least cost method of cleanup is then determined. If

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[2] Superfund Manual, Legal and Management Strategies, Ridgway M. Hall, Jr., Government Institutes, Inc., October 1990, page 5-15, 5-17.

liability and in turn private party contributions were eliminated, cost would become the overriding criteria and "cap and contain" remedies would undoubtedly be the order of the day.

4. Superfund's Liability Provisions Underpin A Private Market Mechanism For Firms To Internalize Liability And Initiate Voluntary Cleanup At Non-Superfund Sites

Without Superfund's liability provisions, there would be absolutely no incentive for any firm to engage in a privately initiated cleanup at a Superfund or other problem site. A significant percentage of the resources provided for cleanup are derived from the responsible parties themselves, not from Superfund directly. The incentive for private parties to undertake these actions at any site, and in turn the ability of the government to force responsible parties to devote their own resources to these cleanups will be eliminated if the liability provisions are dropped.

Moreover, awareness of Superfund's liability provisions and the desire to avoid being subject to them underpin a private cleanup market outside of Superfund's formal, mechanism at virtually every major real estate and corporate assets transaction in America today. The liability provisions have attached a cost to mismanagement, and, in turn, a value to proper, preventive management and liability avoidance. Corporate America has internalized Superfund's liability provisions as a criteria by which to judge corporate assets. This is how it should be. Companies should account for their environmental liabilities just as they do any other corporate liability. Superfund's liability provisions have given rise to precisely this type of liability internalization and, in turn, privately initiated voluntary cleanups to eliminate them.

5. Liability Provides A Major Impetus For Preventive Management In The First Instance And Private Enforcement

As a result of Superfund's liability provisions, firms have begun to take affirmative measures to ensure proper management and to prevent future Superfund sites. Even before the major RCRA reforms of 1984, many firms established a corporate policy of permanently destroying and properly managing hazardous waste for the specific purpose of avoiding any future Superfund liability.

This emphasis on prevention is evidenced by the volumes of "nonhazardous" wastes that are being shipped and managed as hazardous waste at RCRA Subtitle C facilities. Many wastes that are hazardous in fact are not "hazardous" under the RCRA law. Ten to thirty-five percent of all the waste shipped to RCRA Subtitle C hazardous waste facilities are legally nonhazardous wastes that have been sent for proper management due to a concern for the liability that would ensue if these wastes were merely disposed of into an uncontrolled Subtitle D nonhazardous waste facility. In addition, thousands of waste generators have established their own independent audit

program of the treatment, storage and disposal facilities with which they do business, principally to guard against the likelihood of incurring future Superfund liability in the event the facility is being improperly or illegally managed.

6. Superfund's Liability Provisions Stand As The Only Hedge Against Excessive Exploitation Of Remaining Regulatory Loopholes

Despite the landmark reforms of the 1984 Amendments and the establishment of stringent restrictions on the land disposal of hazardous wastes, many wastes and waste management practices remain uncontrolled and unregulated today.

For example, hazardous wastes that are mixed with domestic sewage and delivered to a publicly-owned treatment works (POTW) are completely exempt from RCRA requirements, even though the POTW in many cases may not be licensed or constructed to handle those specific pollutants.

In addition, RCRA's controls on many recycling practices are so lax as to be nonexistent. Many other recycling practices are totally exempt from RCRA regulation. Over 20 percent of Superfund's National Priority List (NPL) consist of recycling facilities that fail to follow proper management practices and created enormous environmental liabilities. Under the label of "recycling" many of the very practices that gave rise to over 239 Superfund sites are still legal today without preventive controls. In short, "recycling" has become the new password for polluters.

The only hedge that exists today against outright and total exploitation of these existing loopholes is Superfund's liability standard. While significant regulations must be put into place regarding a variety of recycling operations, especially those that use hazardous waste to produce "products" that are then placed on the ground, the existence of Superfund's liability standard for releases of hazardous constituents remains the only viable means of preventing total exploitation of these remaining environmental loopholes.

B. Implementation Problems With Superfund's Liability Provisions

1. Legitimate Gripes

To cut to the chase on this issue, Superfund liability dispute is a classic case of the truth lying somewhere between two extremes. In this case, those extremes are leaving the system as it is, and getting rid of liability altogether. There are certainly legitimate gripes to be raised with regard to how the current liability system operates.

But the problem lies not so much with the fundamental tenant of joint, strict and several liability, as with how it has been administered and interpreted. Two of the most legitimate gripes regarding Superfund liability are:

- o That the Agency must recover 100 percent of the money for each response action from the responsible parties; and

- o The inability to cashout small parties before their transaction costs exceed their fair share of the cleanup.

The problem boils down to this: while it is reasonable, indeed just, to require that the largest polluters must pay for the principle share of the cleanup, we are running the system aground by trying to get the last nickel out of them. It is this "all or none" approach to liability that is at the heart of the problem, and what drives people to distraction. It drives the large generator (deep pocket parties) to distraction because they are potentially tabbed with paying for much more than their share, and it drives smaller parties away from the table because the transaction costs frequently exceed their contribution to the cleanup.

2. Current Statutory Authority Exists To Remedy These Problems

It is ironic, however, that the statute that was amended in 1986 established a clear and unmistakable mechanism for the Agency to use so-called "mixed funding" approaches that allow the fund to pick up a larger portion of the so-called orphan shares (i.e., those that cannot be assigned to any one responsible party) and also established an accelerated mechanism for cashing out or taking de minimis parties out of the protracted Superfund process at the earliest possible date. Moreover, the 1986 statute provides EPA with the authority to eliminate or release parties from liability permanently if they conduct and complete a "permanent remedy" of the site. However, none of these authorities have been used to any degree whatsoever, due in large part to the highly charged atmosphere in which this program has been implemented.

The recalcitrance of the Reagan era fomented two untoward relationships: distrust within the Congress and an oversight process that has created a form of paralysis. Since there has never been any level of trust within this program, we have reached a stand-off. Congress has enacted provisions that the Administration has either not wanted to implement, or has been reluctant to implement because in many respects they are not sure how Congress is going to react. For its part, Congress has not been of one mind on how to implement such a dynamic, diverse and complex program. Since Congress cannot speak with one voice and the previous Administrations were loath to implement Superfund to begin with, any attempt to implement aggressive or creative approaches to Superfund cleanup that break new

legal or environmental policy ground are quickly paralyzed. For EPA, there is no reward for taking risks. For Congress, years of rancor have made it difficult to tell the difference between taking legitimate risks and attempts by the Administration to run the program aground.

C. The Shortcomings Of A "Public Works" Approach

Moreover, if the liability system were to be eliminated in its entirety and replaced with something like a public works based system, where no liability is assigned and the sole basis of cleanup contributions is some sort of national fund, we would not only lose the benefits that a liability-based system provides, but would also face a series of additional shortcomings:

- The public works-based system effectively caps the amount of money that will be spent nationally on cleanup. Whereas private parties contribute additional dollars through a liability system, the amount of money spent on cleanup under a public works system would be capped at whatever amount was placed into a national cleanup fund. This fund would have to be financed through some additional tax on all American businesses, raising additional inequities in terms of who is paying for cleanup. Should each American business pay for the cost of cleanup, or should the businesses that created the contaminated site pay the principle cleanup costs?

- There will be no incentive for privately initiated voluntary cleanups, so current market mechanisms established through real estate transfers will be effectively eliminated. Undoubtedly less sites will be addressed.

- Under a public works system the government will be in the position of rationing access to cleanup dollars. In a given fiscal year, do we spend a $100 million dollars on one cleanup or $20 million dollars each on five different sites? How does the government decide such questions? Is this really any improvement whatsoever over the current system?

- A public works system rewards irresponsibility in direct proportion to which it occurs. For example, a company that created its own mess on its own property to the tune of a $100 million cleanup, would now be allowed to tap into a nationally-financed fund to clean this mess. How is that fair or equitable? Why should someone who created their own mess have someone else come in and pay for it? What incentive or reward does this provide for the many businesses that do behave responsibly?

Perhaps the best way to close this discussion is with an example. If every Superfund site were created by a 1,000 parties, and each party contributed .1% of the waste, a public works system would make a lot of sense. It simply wouldn't be worth the transaction costs to go after such small contributions from such a large number of parties. On the other hand, if every Superfund site were created by a single identifiable, financially viable party, it would be nothing short of immoral to have to the taxpayers and the rest of American industry pick up the tab for that company's irresponsibility. But the plain truth is that most Superfund sites are a combination of both -- they are neither wholly de minimis parties nor solely large party PRPs. As such I believe these two examples should serve as guideposts for how we pursue reform.

VII. RECOMMENDATIONS FOR PROGRAM REFORM

Despite this rather lengthy lament over the fate of the program, the solution lies before us in the form of a more creative implementation of existing provisions and statutes, and a mutual recognition that the war between the extremes will never be productive. In short, what we need is a strategy to take the edge off of liability without pulling its teeth, to establish cleanup standards that strive for excellence without sacrificing progress, and that is willing to take some risks to create the incentives for parties to initiate their own cleanup actions. While the Council has not finalized its legislative position on Superfund, we believe that the following revisions to the current program would remedy the vast majority of the problems facing the current program:

IMPLEMENTATION REFORMS TO THE LIABILITY STANDARD

- Explicitly direct the Agency to make greater use of mixed funding through the use of fund dollars to pick up a percentage of the orphan shares at multiple party sites, perhaps even splitting the difference of the orphan shares. The Agency should then pursue recovery of its orphan shares contributions against parties that did not settle with the Agency;

- To alleviate the true burden of high transaction costs on small parties, a sliding schedule of cashout amounts should be established based on the expected cost of cleanup at the site, thereby eliminating future liability for small parties in exchange for an early flat-rate contribution;

- Parties that engage in permanent remedies to incinerate or otherwise eliminate risk of future contamination should be granted a full release from liability from consistent with current authority:

- Any financial shortcomings incurred due to improperly calculated cashout allocations, permanent liability releases that wind up requiring additional cleanup, or due to mutual responsibility for orphan shares, could be

funded out of a "reserve fund" that would be derived from low level tax on sanitary landfill disposal (i.e., 25 cents per ton). Right now sanitary landfill sites are some of the most expensive and difficult sites to clean, but these facilities and their operators contribute not one dime to maintaining the base Superfund program. Approximately 20 percent of Superfund sites consist of trash landfill sites that have mixtures of hazardous and non-hazardous wastes. Since all of us have caused or contributed to Superfund in some small way, it would only be equitable to require a contribution through a disposal tipping fee to help the Superfund program take the edge off of the liability inequities at the margins. Legislation would of course be necessary to incorporate such a new funding source.

- The Agency should use more aggressive mixed funding strategies in exchange for an agreement by the responsible parties not to pursue third-party nuisance suits against the doughnut shops and pizza parlors of the world. Thus the Agency can condition its contribution to a Superfund cleanup on an agreement from the PRPs that they will not pursue actions against marginal parties;

CLEANUP STANDARDS

- We need a more universal approach to cleanup standards that requires significant reductions in the toxicity of constituents found in the hotspots at the Superfund sites, but that also provides the states and the federal government with considerable flexibility to deal with the balance of the contaminants at the site depending upon future land use and/or exposure judgments;

REMEDY SELECTION/TECHNOLOGY DEVELOPMENT

- There needs to be a more concerted oversight by the federal government to ensure that there is consistency and quality in cleanups that are undertaken. In addition, someone at EPA Headquarters needs to be available to resolve disputes or difficulties that may occur at the state level; and

- A meaningful demonstration program for new technologies must be developed that links technology demonstration with subsequent technology selection DOD or DOE sites might provide such a field test for new technologies.

DELEGATION

- To resolve the "who's on first?" question, we need to re-examine the delegation of this program to states. Those states that can demonstrate the capability to use resources wisely and the proven expertise make responsible and prudent decisions, should be given greater flexibility in program implementation. This would not amount to a wholesale turnover of the program to the states, but would simply establish a mechanism by which the states, subject to federal oversight, would take the lead on cleanups.

HAZARDOUS WASTE
CLEANUP PROJECT

Testimony Of John Quarles
On Behalf Of The
Hazardous Waste Cleanup Project
Before The Subcommittee On Superfund,
Ocean And Water Protection
Of The Senate Committee On Environment And Public Works

September 30, 1993

Mr. Chairman, Members Of The Committee

I appreciate this opportunity to testify on behalf of the Hazardous Waste Cleanup Project with respect to the federal Superfund program. This is a program that cries out for fundamental change, and we are grateful that this Subcommittee is making a close examination of it.

The Hazardous Waste Cleanup Project was organized specifically to focus on questions affecting what type of remedial action is conducted at Superfund sites. **The members of the project are the American Automobile Manufacturers Association, American Forest and Paper Association, American Insurance Association, American Iron and Steel Institute, American Petroleum Institute, Chemical Manufacturers Association, and National Agricultural Chemicals Association.**

The members of the Hazardous Waste Cleanup Project strongly support the basic goal of the Superfund program, which is the protection of human health and the environment. We believe, however, that fundamental improvements are needed in the way cleanup decisions are made, so that the massive expenditures for cleanup will represent a sound investment for the American public.

The Hazardous Waste Cleanup Project recently released three reports on the Superfund program. Copies of these reports were distributed to the Committee in July. The first report, *Exaggerating Risk*, focuses on problems in the current methodology for performing risk assessments, the prime subject for my testimony today. The second report, *Sticker Shock*, summarizes the high costs of Superfund and related programs. The third report, *Technological Reality*, explains that cleanup programs may be subject to certain unavoidable technological limitations. We hope that these reports will assist the Committee in its important deliberations.

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Our goal is to improve the Superfund program. Our message is that we need to spend Superfund money in ways that produce genuine benefits. This approach will lessen disputes, reduce delays, minimize litigation, and limit transaction costs. Although many elements of ineffiency occur under Superfund, the central and by far most important feature is selection of remedy.

DEFECTS IN THE PROCESS FOR REMEDY SELECTION

When one examines the ground rules that govern remedy selection, the fact that the program is not cost-effective is no surprise. The CERCLA statute explicitly directs investment for reasons that will produce little if any actual benefit to human health or the environment. The fundamental problem is that Superfund requirements are designed to return sites to pristine natural conditions even in circumstances where the practical benefit of such efforts might be remote or non-existent. **If the Superfund program is to become cost-effective, its focus must be shifted to real risk reduction rather than cleanup to idealistic standards.**

There are three dominant elements in the remedy selection criteria. Any one, or any combination, of these may drive the remedy selection at different Superfund sites. The three elements are (1) preferences for treatment and permanence, (2) ARARs, and (3) risk assessments. In our view the preferences for treatment and permanence and the ARAR requirements should be repealed. The methodology for conducting risk assessments should be reformed, but risk assessments should remain as the controlling feature for decisions on appropriate remedy. **In short, the remedy selection process should be site specific and risk based to ensure remedies that are protective, cost-effective, and technologically feasible.**

The preferences for treatment and permanence have a natural appeal, but it must be understood that this factor only comes into play as a means of requiring remedial actions greater than those needed for full risk protection. As a result, actual overall protection against adverse effects could frequently be better achieved by remedies not selected because of the preference for treatment or permanence. Such other remedies often would provide protection at a dramatically lower cost. Consequently, the preferences for treatment and permanence lead to a poor balance between investment and benefits.

Similarly, the statute also mandates compliance with "applicable or relevant and appropriate requirements" (ARARs) regardless of the actual risk at sites. These are specific standards drawn from other federal or state regulatory frameworks which may have been developed for totally different purposes and which often cannot be achieved, or if achievable, only at exorbitant cost. For example, ARARs may require vast expenditures to cleanse groundwater to comply with drinking water standards, even though there is no realistic prospect of use for that purpose. Moreover, even apart from cost, compliance with ARARs may not lead to the remedy which

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presents the least risk to the site or is most acceptable to the local community. If the best demonstrated available technology (BDAT) standards developed under the RCRA program are selected as ARARs, they may be applied to require excavation and off-site treatment of material, which might create new risks greater than those that would be involved with leaving the material in place and capping it.

I would like now to turn to the subject of Superfund risk assessment. My basic message is this: **Site specific risk assessment provides the most rational basis for deciding what level of cleanup is needed at each Superfund site. Risk assessments should be the central and dominant mechanism in the remedy selection criteria. The methodology for performing risk assessments, however, needs to be modified to make determinations as objective and scientifically accurate as possible.**

The value of the risk assessment process is that it translates all the relevant facts into a bottom-line indicator of how serious a problem may exist at a particular site. Unfortunately, however, certain features of EPA's risk assessment methodology tend to exaggerate the risks at Superfund sites, particularly by greatly overstating the extent of human exposure. We must modify the risk assessment methodology to improve its accuracy. Congress must mandate this change.

PROBLEMS IN SUPERFUND RISK ASSESSMENTS

Under Superfund, we rely on the results of risk assessment to tell us two important things: First, do we need to take some remedial action because this site presents an unacceptable risk in its present form? Second, if we do need to take remedial action, are there particular areas of the site, or particular contaminants at the site, that we should focus on because they are associated with an unacceptable risk? For example, should we be more worried out the cleaning solvents in the groundwater than about the metals in the soil?

Unfortunately, risk assessments, like so many other aspects of Superfund, have gotten caught in the adversarial crossfire of competing interests at site after site. Over time, science and public policy have blurred together. *As EPA itself admits*, the Agency's risk assessment practices tend to overstate the amount of human exposure that occurs at Superfund sites. The result is an exaggerated risk assessment. In this regard, please note the EPA publication, *Understanding Superfund Risk Assessment*, which is attached.

The weaknesses in the risk assessment methodology are described with detail in the report by the Hazardous Waste Cleanup Project entitled, "*Exaggerating Risk.*" As that report explains, risk assessments are performed by combining a series of factual assumptions into a mathematical computation. The most important factors include (1) the extent and nature of contaminants at the

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site, (2) the relative toxicity of those contaminants, and (3) the likelihoods of exposure. In practice, dozens of different factors may need to be evaluated to complete the analysis. In every instance, an effort is made to match the analytical assumption to the actual circumstances at the site, but invariably uncertainties crop up at nearly every step in the process. These require judgement in the selection of assumptions. Standard methodology requires that each of these assumptions be conservative. This builds in a tendency to exaggerate the risk. Moreover, **when a series of conservative assumptions are multiplied together the result can overstate reasonably plausible risks by several orders of magnitude.**

There are also enormous differences from one site to another as to what uncertainties must be addressed. When actual information does not exist, EPA applies "default assumptions." These also can differ dramatically in how conservative they may be. The result is that **while all risk assessments define risks conservatively, there is an enormous range of variability among them. Many exaggerate the risk tremendously.**

Most commonly, the heart of the problem is the issue of human exposure. If no one is exposed to contaminated soil, for example, then that soil cannot cause any harm to human health. At some Superfund sites, by the time the risk assessment is performed, there is no longer any known human exposure to any contamination, because removal actions have eliminated all known exposure. Some exposure may occur in the future, especially if land use patterns change, but even those foreseeable changes may not result in risks that are unacceptably high.

In cases like this, EPA typically performs its risk assessment based on a *hypothetical scenario* in which prolonged human exposure *does* occur. For example, one common scenario is that an adult may decide to live on a Superfund site, despite the high fence and the warning signs that surround the site. He may also decide to drill a well on the site to obtain his drinking water, and he may select the area of the site where the ground water contamination is the highest. He may also continue to live on that site for many years, undetected by anyone, drinking nothing but contaminated ground water over that long period of time.

Now let's assume that under EPA's hypothetical scenario, this adult trespasser would face a high health risk from drinking contaminated ground water over many years. Let's assume that EPA's risk assessment calculated that risk to be a *1 in 1,000 risk of developing cancer*. What does that tell us about the proper remedial action for this site?

I would suggest that it tells us very little. An actual risk of 1 in 1,000 is very frightening, and clearly unacceptable, if it truly is a real-world risk to the real people living near a site. The problem with EPA's hypothetical is that no one in the real world would be likely to experience the kind of lifelong ingestion of contaminants that is attributed to the trespasser. So we still know very little about the risks this site presents to people in the real world. Those risks may be small—or they

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may not be. But the risk assessment, which was supposed to tell us about those real-world risks, has gotten caught up in unlikely scenarios, and has failed to serve its purpose.

An example of the distinction between real risk and hypothetical risk is reflected in the September 21, 1993 *Wall Street Journal* article regarding Triumph, Idaho, where EPA assumed elevated blood lead levels but the facts fly in the face of that assumption.

RISK MANAGEMENT AND RISK COMMUNICATION

Some of the problems of risk assessments lie within the methodology for performing them. In the operation of the Superfund program, however, even greater problems arise in the failure to understand that methodology. In scientific analysis, risk assessment is what it is - with certain limitations, it is a highly useful tool. In the administration of Superfund, the results of risk assessment are used in public debate and applied to drive practical decisions without recognition of the uncertainties and exaggerations embedded in the process.

There is a fundamental difference between risk assessment and risk management. The first involves analysis of risks. The second consists of decisions on what action to take in response. Many of our problems under Superfund arise from a confusion of these two separate functions.

Many weaknesses in the Superfund use of risk assessments thus occur in communicating about the risks. It may be appropriate for some purposes to adopt an assumption that could overstate a risk by two orders of magnitude. Clearly it is not appropriate, however, to take the results of such a calculation and present them for public consumption without fully explaining that they represent a gross exaggeration of the actual risk. Failures in risk communication naturally produce bad decisions in risk management. If the risk assessment for one site exaggerates the risks only slightly whereas at another site the exaggeration is several orders of magnitude, one can hardly expect decisions on remedial action to provide equivalent protection or cost-effectiveness. Under such circumstances, the useful tool of risk assessment becomes a dangerous weapon producing economic waste.

These considerations do not indicate that risk assessments cannot be used to govern the remedy selection process. What they do demonstrate is the need both to make risk assessment assumptions as realistic as possible and also to develop a better understanding among decision-makers regarding the uncertainties involved.

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RECOMMENDED IMPROVEMENTS IN RISK ASSESSMENT METHODOLOGY

The example described earlier illustrates the importance of restoring objectivity and accuracy to Superfund risk assessments. Fortunately, the solution is fairly simple. The Hazardous Waste Cleanup Project proposes 4 ways in which we can improve the Superfund risk assessment process.

1. **Best Estimate Of Risk.** First, we need to know the *best estimate*, or the *most plausible estimate*, of the risk posed by each site. This can be developed by using probability-weighted models, or by using what statisticians call "central tendency" data, or by any other method that is free from bias. Once we know the *most plausible estimate* of risk, it may also be useful to look at a "worst-case" estimate based on upper-bound values, as well as the more optimistic lower-bound scenario. But the indispensable minimum information at every site must be the *most plausible estimate* of risk.

2. **Describe Both Current Risk And Likely Future Risk.** Second, we need to know about the *current* risk posed by each site, as well as the likely *future* risk. For example, the *current* risk at a site, based on all known current human exposures, may be within EPA's acceptable risk range, but the likely *future* risk at the same site may be cause for concern, especially if land use patterns are expected to change in the future. Both categories of risk—current and future—should be dealt with in plain English in each Superfund risk assessment.

3. **Focus On Likely Exposure Pathways.** Third, we need to know whether unacceptable risks will result from any *likely* exposure pathways at or near the site. We can always imagine an *unlikely* situation, such as a person trespassing on a contaminated site, drilling wells for his drinking water supply, and living on the site for 70 years. The theoretical risks associated with that scenario could be quite high. There is no bright line separating the likely from the unlikely, but there is common sense and there is judgment. Some scenarios are *just too unlikely* to be taken seriously, and Superfund needs to start saying "no" in those situations.

4. **Use Of Actual Site Conditions.** Fourth, in order to make good cleanup decisions, we need to know about the risks posed by the *actual* site as it exists today, not about the risks that the site posed in the past. Let me be more specific. If a removal action at the site has improved the situation by limiting possible contact between people and contamination, then the risk assessment should reflect that. It makes no sense to perform a removal action that reduces risks and then perform a risk assessment as though nothing had changed.

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SUPERFUND CLEANUPS AND LAND USE

The relationship between Superfund and land use is of special importance. This relationship is a two-way street. This includes the effects of projections of land use on risk assessments and thereby on remedy selection decisions. It also includes the impacts of potential Superfund liability on prospects for the use of land, and particularly for the redevelopment of contaminated industrial land

Predictions on the future use of land within a Superfund site are often one of the biggest, and most controversial, elements in performing a risk assessment. More specifically, the question commonly raised is whether a site will continue to be used for industrial purposes or possibly converted to residential use. If a scenario of residential use is assumed, the calculations of future risk may be tremendously increased. Prospective residential use raises the possibilities of dermal exposure, including risks of children playing on the ground. It brings in the risk of soil ingestion, including the fearsome calculation of ingestion of dirt by the pica child. Residential use also opens up the risk of installation of a drinking water well on the site. In short, the result of a risk assessment may be higher, perhaps several orders of magnitude higher, if residential use is assumed rather than industrial or other non-residential use.

EPA's approach to risk assessment is to make a strong presumption that every site will become subject to residential use. There is no statutory requirement for making that assumption. Instead, it reflects a discretionary judgement by EPA consistent with the general policy approach of resolving all uncertainties by selecting the most conservative option. This approach can have devastating impacts on the cost-effectiveness of the overall program.

The problem is that in many cases the realistic prospect that a site will be used for human residence may be exceedingly remote. Many hazardous waste disposal sites are located within areas that have been totally dedicated to industrial usage for decades, and there is every reason for confidence that they will remain in industrial use for the future. Moreover, that future use is subject to control. A variety of zoning, land title, and other restrictions can be applied to prohibit future residential use.

A standard approach throughout most EPA Regions is to reject any legal restrictions, commonly referred to as "institutional controls," on the theory that they are not reliable. Proceeding in the analysis, EPA further assumes that if a future use *may* occur, the risk assessment should assume that such use *will* occur. The bottomline is that a likelihood of future residential use that reasonably might be calculated as a 1-in-100 possibility, and which could surely be reduced at least to 1-in-1,000 by institutional controls, is presented in the risk assessment as 1-in-1. By that single decision the risk assessment exaggerates real risks by three orders of magnitude.

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The EPA policy is reinforced by one of the fundamental themes of the current Superfund program. This is the objective of performing a complete and total cleanup so that the site can never present a risk in the future. This is known as a "walk-away remedy." The common expectation was that these complete remedial actions would be the normal pattern at Superfund sites. Today that concept is a proven fallacy. Experience has made clear that in the majority of Superfund cleanups a long-term management program will be required. Wherever groundwater contamination is involved, that long term management will stretch out for 30 to 50 years. *It is a bitter irony to adopt a remedial program with exorbitant economic costs in order to achieve a walk-away remedy only to realize that the government and PRPs are committed to active site management for the next 50 years anyway.*

The impacts of uncontrolled remedial costs fall not only on the taxpayers and companies who foot the bill. Another severe impact falls on the local community where the site is located. A large number of Superfund sites are abandoned. That in fact is why the Superfund program was created in the first place. Many of these Superfund sites are on derelict industrial properties - where not only the disposal area but also the entire property itself has been abandoned. Old factories and warehouses are unoccupied. Throughout the Rust Belt these areas cry out for industrial redevelopment. With the huge potential liabilities imposed under the current law, however, there will be no investors to redevelop these sites. The unlimited, unpredictable, and uncontrollable potential costs represented by any contaminants found at a site are a potent deterrent to any purchaser. They create a barrier preventing new investment, an obstacle to new jobs.

A rational cleanup program need not have such an impact. By basing remedy selection decisions on prevention of real risks, the high levels and vast uncertainties of remedial costs would be made more predictable and acceptable. That would make it far more manageable for the needed investment to both clean up a site and restore it to productive industrial use.

EXCESSIVE EXPENDITURES ON SITE CLEANUPS

Even if we were not in a period of economic distress, it hardly requires emphasis that public commitments of expenditures must represent a wise investment of limited resources. In the case of Superfund, this need has been reinforced by the escalating projections of remedial costs. The impact of the huge expenditures mandated by Superfund is being felt more severely as the program moves into the phase of actual cleanup at increasing numbers of sites. The site by site experience is disturbing. Costs repeatedly are exceeding projections, and it has become common for a site cleanup to exceed costs of $20 million, $40 million, $70 million, and even $100 million. In a number of instances individual companies, towns and government agencies will be required to pay many tens of millions of dollars at just one site. **Far more alarming than the sheer cost numbers is the fact that in a great many cases a large portion of these costs will produce little or no public benefit.**

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The aggregate levels of expenditure for Superfund and related programs are so vast that we cannot tolerate major inefficiency and serious economic waste. Originally established by Congress in 1980 with a five-year fund of $1.6 billion, the Superfund was increased fivefold in 1986. Recent EPA estimates project that remedial costs for the roughly 2,000 sites expected to be included on the National Priorities List will approach $60 billion. A noted study by the University of Tennessee has projected that the most probable estimate of all remedial costs for all hazardous waste sites will be $750 billion, if our current standards and policies are not changed. A summary table setting forth these estimates is attached.

A major part of these costs will be paid directly with taxpayer funds. Under Superfund experience to date, the most costly efforts by far have addressed federal facilities of the Department of Energy and the Department of Defense, and all of that money is paid by federal taxpayers. Many other sites involve municipal landfills where much of the cost will fall on local taxpayers. With the amounts that are involved, however, the American people deserve to get their money's worth, regardless of whose pocket the money comes from.

Regrettably, it does not appear that these expenditures will be a sound investment for the American people. This was reflected in the EPA "Unfinished Business" report, which stated that public benefits from the Superfund program rank near the bottom of the environmental programs conducted by EPA. Despite that fact, Superfund consumes the largest share of EPA's budget, while also commanding the expenditure of billions of dollars of outside resources. The magnitude of economic waste that will occur if Superfund is not changed makes it imperative that Congress act now to reform this important national program.

CONCLUSION

In summary, problems in the remedy selection requirements under Superfund as currently implemented require fundamental change. It is essential to shift the focus of this program to control and prevention of real risks. To achieve that goal, a site-specific risk assessment should become the central governing mechanism in the selection of needed remedial action. The methodology for performing risk assessments should be revised to incorporate reasonable assumptions and realistic assessments.

Fundamental reform of remedy selection can eliminate economic waste of staggering proportions. Those savings would directly benefit both American industry and American taxpayers. In addition, by adopting more reasonable requirements for remedial action, a major deterrent to industrial redevelopment could be removed, brightening the prospects for new investment and new jobs in parts of urban America where they are needed most. This is the message that the Hazardous Waste Cleanup Project is seeking to present. This is the challenge that Congress must address.

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My name is John Bailar. I am a physician (MD from Yale University, 1965; medical license in D.C., at present inactive), and I have earned a PhD in statistics (American University, 1973). I am retired from the Commissioned Corps of the US Public Health Service, where I held various positions in research and management at the National Cancer Institute, NIH. After my retirement I spent many years at Harvard University, where I taught and conducted research on the quantitative assessment of risks to human health. I am now Professor and Head of the Department of Epidemiology and Biostatistics at McGill University. While my professional base is now in Canada, I proudly maintain my primary home, my voting residence, and my citizenship in Washington, D.C. From 1980 to 1991 I was Statistical Consultant for the New England Journal of Medicine. In 1990 I was awarded a MacArthur Fellowship. I have published more than 225 scientific papers and books, of which about 80 have been peer-reviewed original articles. In the past 10 years I have been a member, and sometimes Chair, of about 15 committees at the National Academy of Sciences that have dealt with risk assessment. My current professional interests are in improving the processes of assessing risks to health, and in more generally protecting and improving the integrity of the scientific method and the processes of scientific inference in the day-to-day practice of science.

Necessity and Uncertainty of Risk Assessment

I am here to talk about estimating the size of certain risks to health. Quantitative health risk assessment, which I will call just risk assessment, has two essential, and sometimes competing, features. First, it is necessary. Rational response to hazards requires

some appreciation of the likelihood, nature, and size of possible risks, as well as many other things such as the costs of control, the benefits of using the source of a hazard (e.g., a toxic pesticide), the availability of substitutes, and the effects of protective actions.

Second, risk assessment - specifically here, of toxic chemicals - is highly uncertain. Claims that the risk assessments should neither underestimate nor overestimate risk are fatuous. One or the other will occur every time, though one cannot be certain which. Ranges of uncertainty of 1000-fold are common, and far larger uncertainties are not rare. Risk assessors are acutely aware of this uncertainty, perhaps more so than any of their critics, and they would be very glad indeed to make their science and art more precise, but this is not possible at this time because the uncertainties are rooted in our lack of scientific understanding about crucial matters. And this uncertainty is always asymmetric, with a long "tail" at higher levels of risk. Whatever the size of our best estimate, the true risk cannot go below zero, while its upper value may be many times as large as the best estimate. This is seen in starkest form when the single best estimate is zero risk, but with an appreciable possibility of serious harm.

This combination of necessity and uncertainty is, at bottom, the source of the great attention that all interested parties direct to the processes of risk assessment. Those processes determine the outcome, and can swing results over a broad range of possible values. For example, how are we to respond when concern over an old toxic waste dump demands risk assessment, but the risk can be estimated only with very wide margins of

uncertainty? There are many possible answers to such a question, and it is not surprising that answers from specific persons or groups are often both incompatible and predictable on the basis of institutional and personal interests. To look ahead a bit, the Environmental Protection Agency (EPA) generally does pretty well in this context, despite broad complaints from the chemical industry and affiliates that estimates of risk tend to be too high (and hence allowable exposures too low) and contrary complaints from public interest groups and affiliates that risk estimates tend to be too low. Despite occasional statements to the contrary, both extremes seem to be calling for more rigidity in the process, rather than less -- rigidity to force the process to meet their own goals -- but EPA must retain substantial flexibility to exercise scientific judgment if it is to deal in optimum fashion with this vast uncertainty. Within an open and strictly objective process for risk assessment, there is a critical role for wisdom, and that role must not be reduced or eliminated just because most judgements are attacked from the left or the right (or often, both). I have been particularly concerned about moves to politicize the technical and scientific aspects of risk assessment, and it has seemed to me that this threat has increased in the past few years.

The close relation between one's views of risk assessment and one's personal and institutional biases must not be construed as a result of ignorance, conflicts of interest, or even venality. I know persons at both extremes, and I assure you that they are excellent scientists; they express well thought-out and deeply held opinions, and all or nearly all are troubled by the implications of the great uncertainties in risk assessment for the public welfare. But they cannot all be right.

Some Problems in EPA Risk Assessment

The chorus of complaints about risk assessment is in many cases not informed by objective analysis, the science and the rhetoric are designed to mislead, and sweeping generalizations are not backed up by data. I sometimes wonder, only a bit facetiously, whether I am the only person left who is not always 100% sure how to fix a creaky risk assessment process. Of course, "fix" is ambiguous, and some suggestions for change remind me of W.C. Fields when he was busy at his most disreputable machinations.

At another time I could comment on how the environmental groups, consumer protection groups, and other public interest organizations overestimate risks, sometimes seriously. I understand that the concern today is at the other end, so the rest of my remarks will focus on the underestimates that are inherent in a range of recent proposals from various industry groups.

I agree with those industry proposals that some change is needed to correct two kinds of problems, though I come to different and much less radical recommendations. There is not nearly as much wrong with risk assessment as some observers believe. First, EPA has indeed occasionally overestimated risks so much as to appear foolish. Each of these instances needs prompt repair, but a small collection of anecdotes about failures in a large program does not in itself mean that the whole process must be scrapped and replaced. I strongly urge improvements rather than scrapping. Of course, interested parties now calling for wholesale change are not asking that all rules be abandoned; rather, they

call for using their own favored rules in place of those that lead to unwanted conclusions. Second, the EPA process has become hidebound, as well as very slow and expensive. However, these problems of rigidity, time, and cost are a result of nearly constant, serious challenges to EPA's risk assessments. Thus the Agency has necessarily become highly defensive, and this is reflected in its attention to minute detail and layers of review even when it is clear that more detail and review is unlikely to change things by much. The challenges themselves often come from industry, and occasionally seem designed to delay, intimidate, and obfuscate. I would be glad to know whether industry would be willing to trade some of its present scope for challenge to EPA risk assessments in return for a process that is more flexible, faster, less expensive (to all participants), and perhaps more predictable in its timing as well as its outcome.

Conservatism in Risk Assessment?

Within this context of problems (all fixable) we must give special attention to claims that EPA's risk assessments are unduly "conservative". Here, "conservative" is a code word that means highly restrictive of public or environmental exposure to toxic agents, even when the true risk is likely to be very small or zero. Industry groups and others with a stake in reducing risk estimates and raising allowable exposure limits point (often correctly) to a list of features of EPA's risk assessments that converge to produce higher estimates of risk than strict objectivity might dictate. However, they largely ignore other features of EPA's risk assessment process that tend to work in the other direction. I will focus on the underestimates rather than the overestimates because I believe that the latter will be

adequately covered by other witnesses here. I will talk mostly about risks to human health, because that is what I know best, but each point has a close analog in concerns about the health of the environment.

It is widely accepted that we must not wait to act until we can count sick people, but there is a deeper problem. In the present state of science, and into the foreseeable future, there may simply be no way to "prove" that some important risks are real. How sure must we be before we act? One of the most critical points leading to underestimation of risks is called "statistical power". This is a technical term for the ability of a given research study (or by extension, a collection of studies) to detect an added risk of a specified size if such a risk exists. For example, consider an oversimplified experiment in which 2 of fifty exposed animals get cancer of the liver, while none of fifty control animals do so. This difference of two versus zero is far from usual limits of statistical significance; there is no proof of risk. Yet 2/50 = 4%, or 40,000 per million exposed animals. It is clear that the experiment has virtually no chance of demonstrating any human risk that approaches the goal of EPA and other regulatory agencies of keeping risk to levels not exceeding one to ten cases per million. Statistical power is low. In practice, things are not nearly this bad because additional dose groups would be used, sample sizes are commonly a little larger (though rarely more than 100), and findings are interpreted in light of much broader knowledge and experience in risk assessment. Still, statistical power - the ability to detect a real risk if it should be present - remains far lower than any of us would want. The prudent risk assessor knows this and acts accordingly, as does the prudent risk manager. We must not be trapped

in a mode of acting as though no risk exists until it has been clearly demonstrated; risk assessment is not a criminal trial in which the defendant must be presumed innocent unless found guilty.

A second critical point is what I call log-thinking (for logarithmic). If we estimate that the probability of some effect is equally likely to have one of three values, 1 cancer per million exposed persons, 10-fold higher, or 10-fold lower, the average is not one per million but 3.7 per million (0.1 + 1.0 + 10.0/3). This problem is very common in risk assessment, and becomes increasingly important as factors that determine risk are multiplied together. For example, if each of 3 factors is equally likely to have the same 3 values (no effect on risk, i.e., a factor of 1, or a 10-fold decrease, or a 10-fold increase) the average is again not 1 x 1 x 1 = 1; it is more than 50-fold (i.e., 3.7^3). This is because 10-fold overestimates, when they occur, are in fact much larger errors than 10-fold underestimates, and the 1-in-27 chance that each of the three factors is underestimated by 10-fold has an especially large impact although it occurs with less than 5% probability. Where risk factors are in fact multiplicative, as is often the case (e.g., when total dose is estimated as concentration in air x hours per day x days exposed, or even exposure x toxicity = risk) simple multiplication of "best" estimates may give a product that is in fact far too low. Complaints from some industry groups about the multiplication of risk factors seem to ignore both the legitimate role of multiplication and this inherent tendency of multiplication to underestimate actual risks.

A third anti-conservative bias in many risk assessments is the focus on a single adverse outcome - one form of cancer, perhaps, or one type of birth defect - even when a substance is known to cause multiple health effects. Even when chemicals are tested for their effects on cancer, other health effects have often been ignored or not examined. These include reproductive, neurological, liver, kidney, and immunologic effects, among others. An estimate of risk of cancer of the liver, say, may understate total health hazards even if liver cancer is the most common adverse outcome and even if that one risk is moderately over-estimated. EPA has taken some important steps to reduce this problem, but the process has not yet been completely changed, and this remains a feature of older risk assessments that have not been revised recently.

Fourth, this focus on a single adverse outcome is generally paralleled by a focus on a very few toxic substances that have been detected and measured, and for which adequate animal data exist. For example, a toxic waste dump may contain hundreds of identified substances and thousands of others that have not been characterized. In this melange, should we count the risks of only one, or at most a very few?

Fifth is the likelihood, and sometimes the certainty, of great person-to-person variation in sensitivity to environmental hazards. Animals that are used to assess toxicity are almost always small rodents, and they are inbred to produce genetic uniformity. Further, they are fed homogenized diets; kept in a single room under uniform holding conditions; protected from other chemical exposures, infectious diseases, and unnecessary

stress; and otherwise kept as similar as possible in their likelihood of response. The experimenter's intent, roughly summarized, is to come as close as possible to testing one animal many times rather than testing each of many animals just once. Compare this test setting to the enormously varied human population that is the target in regulatory risk assessment - a population that is genetically mixed, suffers from illnesses and other conditions that may potentiate response, has prior, concurrent, and later exposures to other toxic agents that may work in synergy with the agent under study, and in general violates all the principals summarized as "test one animal many times". It is not difficult to imagine that risk assessments that are likely to be too high, perhaps much too high, for the "average" person may still be very much too low for an appreciable proportion of the population at large.

Sensitivity to chemical hazards seems to be especially great in some populations of special concern, such as fetuses and persons at the extremes of age, pregnant women, those who are ill, and racial and genetic subgroups. Data for these high risk populations are always sparse, and often non-existent. Children, especially, may have immature or weak defenses as well as high mitotic rates that increase their sensitivity to carcinogens and mutagens, and children are of course uniquely susceptible to congenital malformations and other birth defects.

There is a need to consider person to person variation in exposure, as well as in sensitivity. Exposures far greater than average are common among children; subsistence

farmers, hunters, and fishers; persons living near manufacturing facilities or toxic waste dumps, etc. Such persons may also be at elevated personal risk because of prior and concurrent exposures to other toxic agents. Clearly, for some chemicals, multiplying the dose by 2 or by 10 will raise risks much more than 2-fold or 10-fold. Lower doses are proportionately safer. For many other chemicals, however, the reverse is true, at least in animal test systems. The first, low, dose does most of the damage, and larger doses have proportionately smaller effects. For such toxic agents, risk assessments that simply scale back both doses and effects may seriously underestimate real risks at low exposures.

Some evidence about systematic underestimation of risk is provided by a tabulations of changes in the limits on chemical contamination of workplace air developed by the American Conference of Governmental Industrial Hygienists (ACGIH); a private organization with very wide membership. Over the years up to 1983, when my colleagues and I examined this matter, the ACGIH had published standards for 554 chemical substances and had published 222 changes in those standards. Of these, 83 percent were in the direction of lower exposure limits, nearly always because of new information about either effects at unexpectedly low exposures or effects that had not been recognized earlier. This is illustrated by the sequence of changes in standards for benzene, which show a steady progression from the first proposal of 100 parts per million (ppm) in air in 1941, though seven changes to the present standard of 1 ppm. I know of no reason to believe that these general patterns have changed since 1983.

In the face of these considerations, I find it difficult to credit arguments that risk assessment systematically and seriously overstates risks. Scientists who are deeply involved, day to day, in risk assessment understand very well these ways in which their estimates of hazards to humans may be too low, just as they understand other reasons that the estimates may be too high. Their concern about balancing these opposing errors may well be the reason for their general resistance to pressures to reduce risk estimates in response to complaints about the conservatism that some observers believe affects their work.

Other issues

Several other matters deserve brief comment. One is that the time horizons of legislation should drive the time horizons of risk assessments. If legislation is to protect generations yet unborn, as seems appropriate here, risk assessments should also look many, many, years ahead, yet few go beyond three score and ten, the biblical span for a single human life. This matter seems especially relevant to proposals that certain toxic waste dumps be stabilized, buried, quarantined, or otherwise put beyond present human contact. How sure can we be that such measures will remain effective (or that the health hazards will diminish) over a period of 100 years? 1000? 10,000? Much though has been given to the very long-term safety of radiation waste; no similar effort is evident regarding toxic waste.

Risk assessment has a voracious appetite for data. There is never, and could not be, enough data to settle even the most critical uncertainties. This is because of the vast gaps in scientific understanding, such that risk analyses are almost entirely based on descriptive information - what happens, under what circumstances, at what dose - rather than on an understanding of the ultimate biologic process and how they respond to toxic insults. That understanding will come with time, but I cannot credit the claims of a few scientists who believe that they already have much of the "truth" about even so simple a matter as estimating low-dose risks from high-dose data. Thus the risk assessor (with qualms, to be sure) often assumes that (for example) one-tenth the dose of a carcinogen will cause one-tenth the risk of cancer - a purely descriptive model that is sometimes too high, sometimes too low, rarely or never exactly right, but may be closer to the mark for a broad range of chemicals than any other assumption.

When critics complain that EPA and other regulatory agencies do not use real data even when data are available, my first thought is, "Of course not". Real data must pass many tests, including accuracy and reliability, availability to the public, adequate scope (two surface samples from a site in the Carolinas cannot possibly estimate average exposures with adequate precision when exposures may change yard by yard), and relevance to the model to be used (including feedback, whereby good data can change the choice of model). While pleas to use real data have some intuitive appeal, the data must be examined case by case to determine whether they are, in fact, better than EPA's default assumptions. This seems especially relevant in assessing the risks of small and low-level

dumps, where resources for extensive testing and validation are not available and where, in turn, there may be serious doubts about replacing the default assumptions.

In conclusion, I must repeat that I have focused on the flaws on just one side of this debate about whether EPA's risk assessments tend to be too high, too low, or about right. Arguments in the opposite direction will no doubt be aired. My view is that EPA's risk assessment methods are squarely in the main stream of science, EPA does a very creditable job of estimating health hazards of toxic chemicals in the face of enormous uncertainty and enormous pressures and that on average the risks of toxic chemicals may be underestimated at least as much as they are overestimated.

22 October 1993

The Honorable Frank R. Lautenberg
Unites States Senate
Washington, D.C. 20510-3002
U.S.A.

Dear Senator Lautenberg:

Thank you for your letter of October 4. I am glad to respond to your additional questions.

1. **How can EPA improve its Superfund risk assessments? Do your recommendations require legislative attention, or can they be accomplished by the Agency on its own initiative?**

I do not see that new legislation is required, though other kinds of legislative "attention" are certainly appropriate and in the long-run might be highly beneficial. Given my view that risk assessments now are about as good as they can be made on the basis of present science, and given what I know to be the intense interest of EPA scientists and administrators in the further development and use of the relevance science, it seems to me that congressional encouragement (and perhaps some protection from persistent, noisy critics) will be sufficient.

2. **If we allow PRPs to conduct risk assessments on their own, could they come up with very different results from EPA?**

3. **Do we want the person who foots the bill to perform the risk assessments that determine how much the bill is going to be?**

These two questions seem to deal with overlapping issues, so I will respond to them together.

During the hearing I outlined some of the uncertainties in risk assessment, and other witnesses have commented on other uncertainties. Many difficult judgements are required in the course of almost any quantitative assessment of human health risks from chemical exposures. I have often observed these judgements to be affected by self-interest, without implying that there is any conscience distortion of the process or any pressure to reach a pre-determined conclusion. Thus, industry employees commonly come to much lower estimates of risk than other scientists, while unusually high estimates often come from public interest groups with a stake in this matter, or from citizen groups formed to deal with specific perceived hazards. For this reason that the whole process of risk assessment for regulatory purposes should be kept in

the governmental domain, though always with opportunity for substantial factual input from interested parties.

4. What is the best way to deal with scientific uncertainties when EPA does Superfund risk assessments?

It is essential that EPA, and any other agency that undertakes risk assessment, deal in a fully open and straightforward way with the frequent and great uncertainties that are unavoidable in such activities. This might be done in several different kinds of ways, and these will be the subject of extensive discussion in a forthcoming report from the National Academy of Sciences on risk assessment of hazardous air pollutants. One way is to attach "uncertainty bounds", which are much like ordinary statistical confidence limits but reflect a broader range of uncertainties. Another is to develop a whole (subjective) probability distribution of the likelihood that risk has one or another value.

5. Could you give us some other examples of how risks have been underestimated in the past, and what the consequences have been?

Underestimates have been common in years past and in other areas of hazard evaluation. For example, consider the long string of reports of serious drug toxicity that had not been appreciated prior to general release and marketing of the drug. Radiation hazards were consistently and very seriously underestimated for a period of decades between the discovery of ionizing radiation and the development of the large data bases needed to examine risks. My testimony some months ago before Senator Monihan reported on a study of changes in the allowable exposure limits on air pollutants in the workplace that have been developed by the ACGIH. We found that changes were quite common, that they were nearly always in the direction of lower exposure limits, and that the reductions were usually a result of either new research studies showing toxicities at exposure levels that had previously been considered safe, or re-interpretations of older data in light of new methods of analysis and new understanding of hazards. Benzene is a case in point; over a period of about 50 years, allowable exposures were reduced step-by-step from 100 parts per million (ppm) to 1 ppm. We do not have data demonstrating risks from current standards for regulation of hazardous waste sites, quite possibly because of the very great difficulty of demonstrating that such risks are present in small communities. For example, if there were a real increase in the overall cancer mortality rate from 120 deaths per year per hundred thousand population to 240, this doubling of risk would be a disaster for individuals and the community, but in a small town would be virtually undetectable by any epidemiologic techniques. Similarly, a substantial increase in the risk of a specific form of cancer would be undetectable, even in very large populations, without the use of animal studies of the kind that have been discussed in testimony. The absence of direct demonstration of risk does not,

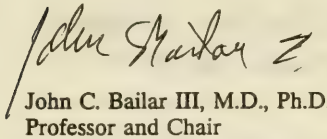
of course, mean that no risk is present, especially when populations are not large and research tools for this purpose are not strong.

I would like to take this opportunity to comment on two additional matters that arose in discussions among the witnesses after we concluded our testimony. First is the value of having some direct, targeted discussion about the question, When are site-specific measurements adequate to replace EPA's default assumptions? This is not a question that admits simple answers. However, one solution might be to use site-specific data to modify but not replace the defaults when the site-specific data are substantial and of high quality. In general, and despite the obvious problems, I place greater reliance on the default assumptions than on a very few, possibly unrepresentative, observations at any specific site. My concern would be multiplied if the sampling from the site or the reporting of results were left in the hands of interested parties.

The second additional matter has to do with what we mean by "average" or "best estimate". Statisticians have developed a wide range of measures of "central tendency", the most common of which are the arithmetic mean, the median, and the mode. To illustrate, consider a set of seven measurements of some toxic compound at a waste site: 0,1,1,2,3,5 and 30 ppm. The mode, or most frequent single value, is 1 ppm. This is in a sense a "best estimate," though only two of the seven samples had this value. The median (that is, the value that lies at the middle when the observations are in increasing sequence) is 2 ppm. This is another kind of "best estimate". The arithmetic mean, often known just as the "average", is 6 ppm. Thus the mean is higher than all but the highest of the individual measurements. In a more extreme example of irregular distribution over a site, suppose that a toxic chemical is simply not detectable in more than half of the samples. The mode and the median would both be zero, however high the observed levels in the remainder of the samples. Some of the disagreements among witnesses and others who are concerned with estimating hazards may arise because we are attempting to estimate different aspects of risk. I might even agree with representatives from industry that EPA's standards methods tend to overestimate the mode, and they may not infrequently overestimate the median. However, for purposes of protecting the public health, the only appropriate measure is the arithmetic average. Note that, as here, the average can be considerably larger than the central point or median, and it can in fact be much larger than even the 95th percentile of the distribution, if the hazard is distributed in a highly irregular fashion over the area of interest.

Please call or write if you would like any clarification of these or related matters.

Sincerely yours,



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TESTIMONY OF THOMAS S. BURACK,

VICE CHAIRMAN, NEW HAMPSHIRE SUPERFUND TASK FORCE,

BEFORE THE

SUBCOMMITTEE ON SUPERFUND, RECYCLING, AND SOLID WASTE MANAGEMENT

OF THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,

U.S. SENATE

SEPTEMBER 30, 1993

Mr. Chairman and members of the Subcommittee, thank you for the opportunity to testify here today. My name is Tom Burack and I appear today in my capacity as Vice Chairman of the New Hampshire Superfund Task Force, which was formed by Congressman William Zeliff of the First District of New Hampshire in July 1992. Congressman Zeliff requested that the Task Force strive to reach as much consensus as possible on legislative and administrative reforms that would improve the Superfund law. The twenty-seven member Task Force consisted of a broad spectrum of parties interested in or affected by Superfund, all of whom volunteered their time to the effort. Participants included representatives of municipalities, small and large businesses, and environmental groups, as well as environmental consultants, attorneys, bankers, and concerned citizens. We believe that the diverse representation on the Task Force makes it distinctive if not unique among the groups and organizations that have so far attempted to formulate recommendations for improving Superfund.

During the 98th Congress, I served as legislative assistant for environmental matters to then-U.S. Senator Gordon J. Humphrey (R-NH), who was a member of this Committee for several sessions of Congress. Thus, I was involved in some of the preliminary discussions that led to the 1986 amendments to Superfund. For the past four years I have practiced environmental law with the firm of Sheehan Phinney Bass + Green, P.A., in Manchester, New Hampshire. Although my firm has represented various parties at practically every Superfund site in New Hampshire, and at several in other states, my service on the New Hampshire Superfund Task Force has been strictly pro bono in nature.

I understand that the Subcommittee is especially interested in the Task Force's recommendations on the issues of cleanup standards and remedy selection. The Subcommittee should first understand that the Task Force report covers a broad range of Superfund issues, including liability, process and remediation, as well as suggestions for an alternative future approach to the overall problem. I request permission to submit the entire Task Force report for inclusion in the transcript of this hearing. Please also understand that from the outset of the Task Force's work in July 1992, agreement was reached that our overall goal should be to find ways to achieve necessary cleanups in as equitable, expeditious and cost-effective a manner as possible. This general principle guided us throughout our deliberative process.

Some Fundamental Questions

Before getting into the issues that are to be the topic of today's hearing, it is important to step back and to ask and answer some fundamental questions. First, what is the overall goal and mission of the Superfund law? As we go about addressing the cleanup of our past sins, should we be thinking of Superfund as an environmental restoration law or as a law for protecting public health, welfare and the environment? The distinction is significant. If the goal is environmental restoration, we will continue to spend billions upon billions of dollars on transaction costs, endless studies, litigation, and restoration efforts. On the other hand, if our goal is to reduce risks to public health and the environment, it is likely that communities and industries will respond more readily and more efficiently to the cleanup needs and will take the steps necessary to ensure adequate protection. It is worth noting that the Superfund law does not contain a mission statement, that it does not state any goals.

Another fundamental question that must be asked and answered is what the appropriate role should be for the federal government. In this day, when from the White House itself, the cry is to reinvent government, to increase efficiencies, to reduce redundancies, and to reduce the overall cost of government, should the role of the federal government be to oversee the site cleanup process, or should it be to micromanage

that process? Many states are already efficiently and effectively running many other federally mandated environmental programs, and there is every reason to believe that many states could do the same with the Superfund law. The federal government's efforts and monies may be most usefully expended on the development of innovative technologies, overseeing improvements in the cleanup process, and providing better information for the decision makers at the state level.

The need for flexibility is a theme that runs throughout the Task Force's recommendations on remediation issues. Too often in New Hampshire we have experienced a cookie-cutter approach by EPA in implementing the Superfund law. Time and again we have found ourselves facing situations where even the regulators agreed that a different approach would make eminent good sense, but alas it could not be employed because their hands were tied by the words of the Superfund statute.

The issues of cleanup standards and remedy selection are integrally and nearly inextricably related. And both are tied to the issue of risk. Consideration of these issues will also draw us inexorably into a brief discussion of funding and costs. Although the focus of this hearing is on remediation issues, we must all recognize that limited financial resources do not permit us to restore our environment in all locations to its pristine condition. We must therefore ask and answer the tough questions about existing contaminated sites: how clean is clean enough?

are we willing and able to live with some level of risk? what should we be willing to pay to achieve that level of risk (or cleanliness)? And what other risks will be left uncontrolled if we spend our limited resources to address hazardous waste sites? Through its recommendations, the New Hampshire Superfund Task Force has tried to answer most of these questions.

Some General Principles

The Task Force recommends that the remedy selection process take into account a number of factors that are either not considered under the current system or are not given sufficient weight. First, remedies should be risk-based and the risk assessment process should be predicated on realistic rather than worst case assumptions. Second, the needs and concerns of the local community, including the competing funding needs of the local community, must be taken into account. Third, cleanup goals should be correlated with the actual risks posed by a site, taking into account such factors as current and future land uses, proximity to natural resources such as aquifers, and the ability of institutional controls to effectively reduce actual risks. Finally, a cost-benefit analysis should be applied in selecting remedies and setting performance standards.

The Task Force's Recommended Approach

Because I understand that the Subcommittee is looking for specific suggestions for improving the process of selecting remedies and cleanup standards, it may be most useful to describe how a revised Superfund law would work if all of the Task Force's recommendations were implemented. Along the way, I'll point out possible variations and ways in which our recommendations are either similar to or different from proposals offered by other groups. To avoid complicating matters, I will largely avoid the question of who will be responsible for taking or paying for each step. For the purposes of this testimony, it should suffice that voluntary cleanups by responsible parties should be encouraged with appropriate incentives, and that states should play a larger role in implementing the law than they do currently. With these preliminaries behind us, this is generally how the Superfund remediation process would proceed under the recommendations of the New Hampshire Superfund Task Force:

1. The law should place initial emphasis on immediate reduction of actual substantial risks to human health or the environment. As soon as a site is brought to the attention of regulatory authorities, an immediate determination should be made of the need to take emergency steps to reduce actual substantial risks. For example, where there are abandoned containers of hazardous substances, those would in most cases be removed immediately. If there is no evidence of soil or groundwater .

contamination and no anectotal evidence of dumping, no further actions would be taken at the site.

2. Once any emergency steps have been taken, a single, thorough site assessment would be conducted to evaluate the remaining residual risks. Only the residual risks would be considered in determining whether a site should be included on the National Priorities List (NPL). All interested agencies should participate in the single site study so that all data gathering needs are met at one time and redundant studies are eliminated. If the residual risks are small, the site would be delisted (in the case of a site already on the NPL), and/or transferred to state authorities for any further action.

The general sense of the Task Force was that EPA has been overly ambitious in its efforts to include additional sites on the NPL. Many sites, particularly smaller ones that will require little if any further remediation, could be addressed more quickly, more efficiently, and in a more cost-effective manner if handled under state laws rather than Superfund.

3. The degree and type of residual risks would be major factors in the selection of cleanup standards and in determining the most appropriate long-term remedial approach. The assessment of each site would include a thorough risk assessment that utilized realistic (rather than worst case) assumptions about exposure pathways and actual exposure levels. The determination

of actual risk would include consideration of such factors as current site conditions, current and projected future uses of the site, as well as proximity to important natural resources such as aquifers that are currently being used to supply drinking water or that are projected to see such use in the near future. Thus, the public and local government representatives should be able to participate actively in the risk assessment process, at least to help determine likely future land uses, as well as to help identify actual and potential exposure pathways and levels.

4. Once the risk assessment process is completed, cleanup goals would be selected that correlate with actual risks to human health and the environment at the site. For example, for a site that has been and is likely to remain the location of a manufacturing or industrial facility, the cleanup goals would be less stringent than they would be if the site were already a residential area or were likely to become a residential area in the near future. Likewise, substantial efforts would not be expended to restore an aquifer for which there is no community need and which poses no uncontrollable risk, or which is otherwise unusable due to naturally occurring contaminants. Cleanup standards or goals would be determined not by applying Applicable or Relevant and Appropriate Regulations (ARARs), but by looking at actual current and future risks and determining an appropriate cleanup level that would minimize those risks in a cost-effective manner.

The Task Force did not specifically consider the possibility of establishing uniform national cleanup standards for soil and groundwater contamination, as has been suggested by some groups that have already testified before this Subcommittee. However, such an approach would not be consistent with the actual-risk-based approach recommended by the Task Force. Flexibility would be lost unless such an approach were modified to set different cleanup levels based on such factors as current and future land uses, and unless there were built-in provisions for waivers and variations based on site-specific considerations.

5. Once appropriate long-term cleanup goals have been determined, a remedy would be selected that would achieve those cleanup goals in a cost-effective manner. The existing emphasis on treatment and permanence would be tempered through the application of a cost/benefit analysis of all proposed remedies. A number of considerations would come into play:

a. Institutional controls could be used to minimize both short-term and long-term risks, thereby reducing overall costs as compared with more active remedial steps.

b. Where affected resources such as groundwater are not immediately needed to meet local drinking water demands, longer cleanup periods may be appropriate, thus taking advantage of natural attenuation and reducing overall remedial costs.

c. At sites where risks are low, costs of remediation are extremely high, or no proven technology exists for achieving complete remediation (e.g., sites contaminated with dense non-aqueous phase liquids (DNAPLs)), containment and/or stabilization would be appropriate remedies, at least as partial, temporary or interim measures.

d. Site boundaries would be defined to include areas subject to easements or other institutional controls, and compliance boundaries for cleanup standards would be extended to the furthest limits affected by those controls, so that cleanup goals would be more realistically attainable. For example, a groundwater management zone could be created around a landfill, and cleanup goals for groundwater would have to be met at the perimeter of that zone rather than at the toe of the waste pile.

e. Standardized or presumptive remedies would not be required where the application of other technologies would result in a less expensive but equally protective method of protecting human health and the environment. For example, RCRA Subtitle C hazardous waste facility construction requirements would not automatically be imposed on the closure of old municipal or private landfills that had accepted primarily municipal solid wastes but showed some hazardous substance contamination in the underlying groundwater.

f. The economic impact on the potentially responsible parties (PRPs), including the impact on the local community, must be considered in evaluating each proposed remedy (and in determining whether to make "mixed funding" from the Hazardous Substance Response Fund available at a site). The overall public welfare of the local community must also be taken into account, particularly with respect to sites for which a local municipality may have substantial financial responsibilities. For example, if a proposed remedy would place such a heavy financial burden on the local community and businesses that the effect of cleaning up a site would be to drive companies into bankruptcy, push up local tax rates, and lead to greater local unemployment, the overall public welfare may not be served by selecting that particular remedy unless "mixed funding" is provided to ameliorate the effects and/or a less extensive and more cost effective remedy is implemented. Likewise, imposing substantial Superfund costs on a local community and its businesses at the same time that the community has other more pressing needs, such as building a sewage treatment plant, building a new school, or improving the safety of local roads and intersections, may also result in a skewing of the public welfare unless "mixed funding" is made available. In other words, the remedy selection process should not be blind to costs and the competing needs of local communities. Dollars spent to reduce theoretical future risks from hazardous waste sites are dollars that will never be available to immediately protect people and the environment from the very real risks posed by inadequate sewage treatment,

inadequate fire protection, unsafe roads and intersections, or a lack of childhood immunizations against contagious diseases.

6. Once a remedy has been selected, it would be implemented as quickly as possible. Regular periodic reviews would determine whether overall risks have been reduced to an acceptable level. As soon as the risk reduction or cleanup goal has been met, the site would be delisted and the remedial process would be deemed complete.

Conclusion

The New Hampshire Superfund Task Force recommends that the Superfund remediation process be driven by realistic assessments of actual risks to human health or the environment. Those sites that pose imminent, actual threats should be given the highest priority and emergency steps should be taken to reduce or minimize those risks. Sites posing lower level or less immediate risks should be addressed by setting cleanup goals based on actual risks and selecting a remedy that best balances the costs and benefits.

This approach will provide considerable flexibility in the remedy selection process and will allow for greater sensitivity to the general public welfare as expressed by community members. Just as under the current law, different sites would be cleaned

to different standards, based on a variety of site-specific and community-specific factors. Each site has many unique features, and it would be unrealistic to expect a "one-size-fits-all" approach to either cleanup standards or remedy selection to be equitable, efficient or cost-effective. Ultimately, that is the goal we all must share in looking for ways to improve the Superfund law: to ensure that necessary cleanups are conducted in a manner that is as equitable, efficient and cost-effective as possible. We commend our recommendations to this Subcommittee as a realistic and practical means of achieving this goal, and I look forward to answering any questions you may have.

Additional Questions of Senator Lautenberg
for Mr. Thomas Burack

1. How can we change the risk assessment process without taking a chance that EPA will end up understating the real risks to people near Superfund sites? What if the new risk assessment process does understate risks -- should PRPs or the government bear the burden of a site that turns out to be more dangerous than we estimated?

RESPONSE: The general consensus of the Task Force is that the current risk assessment process tends to overstate risks, often by a very substantial margin. The two specific recommendations made by the Task Force with respect to reform of the risk assessment process are designed to lessen the extent of the perceived current overstatement of risk. First, the Task Force recommends that risk assessments should use exposure factors that more accurately describe actual site conditions than do the standard exposure factors. More on this in a moment. Second, the Task Force recommends that when consideration of the quantities of materials consumed is important, the risk assessment process should consider values that are more reflective of average conditions, or at least that reflect a range of conditions.

The difficulty with this question is that it assumes that "real risks" cannot be controlled or eliminated. To the contrary, the application of appropriate institutional controls could and should render the entire debate over the accuracy of risk assessments little more than an academic exercise. If risk assessments were to make exposure assumptions based upon the application of effective long-term institutional controls, there would be little if any chance that the "real risks" could be underestimated.

For example, if a site involved contaminated groundwater, it should be possible to provide a permanent, uncontaminated alternate water supply and at the same time to prevent any further use of the contaminated water. In New Hampshire, we would do this through the use of various state and local statutory and regulatory provisions. First, we would most likely establish a so-called groundwater management zone pursuant to New Hampshire Code of Administrative Rules Env-Ws 410, our Groundwater Protection Rules which were adopted in February 1993. Notification would be given to the owners of affected wells, and, if necessary, restrictions would be placed on the use of those wells. In addition, the municipality, through its zoning ordinances, could create an aquifer protection district which would restrict use of groundwater within and in the vicinity of the groundwater management zone. To the extent necessary, and with appropriate remuneration where necessary, deed restrictions could be placed on properties that sit above the contaminated groundwater. In New

Hampshire, commercial well drillers have been required since 1984 to report the results of all wells drilled in the state. Some municipalities have similar requirements. Although these kinds of ordinances, statutes and regulations are not currently designed to achieve enforcement of institutional controls, the existence of a database could serve as a basis for effective enforcement. For example, if any wells were reported to be drilled in restricted areas, the state or municipality could immediately take action to prevent use of the well. Alternatively, consideration could be given to requiring notices of intent to drill so as to avoid any subsequent disapproval. However, the mere prospect of post-drilling disapproval of well use by state or local authorities would probably be sufficient to ensure that well drillers and property owners would consult appropriate state and municipal files to determine if there are any restrictions before they actually commence drilling. If more of the Superfund program were to be delegated to the states, as is recommended by the NH Superfund Task Force, some of the conditions of delegation could include assurance that the states seeking delegated authority have sufficient statutory provisions in place at the state and/or local levels to ensure appropriate and effective institutional controls, as described above.

Finally, this question asks who should bear the burden of a site that turns out to be more dangerous than originally estimated. This is not a question that was directly considered by the Task Force. Nevertheless, consistent with a number of principles and other recommendations of the Task Force, this should be a shared burden. Businesses in particular, and municipalities in general, need some certainty in managing their financial affairs. They have to know that by paying a certain amount of money they can completely clear themselves of any future liability connected with a Superfund Site. Thus, one possible approach may be to give PRPs at a site the option to place a certain sum of money into a special fund or account that would be available on a national level to address sites where risks subsequently prove to be greater than originally estimated. By making payments into such a fund, all of the PRPs at a given site could be released from any future liability connected with it. To the extent that this national fund ever had to be drawn on for particular sites, the federal government (i.e., through all of its taxpayers) would be on the hook for substantial cost overruns.

2. We heard from industry representatives at our last hearing that EPA should develop national cleanup standards -- do you think they would solve the problems you have identified with EPA's risk assessment process?

RESPONSE: The Task Force did not specifically consider the use of national cleanup standards as an alternative to ARARs, or as a possible solution to some of the problems that the Task Force perceived in EPA's risk assessment process.

Nevertheless, if sufficient flexibility could be built into an approach that used national cleanup standards, some of the Task Force's concerns with the entire remedy selection process could be addressed. The Task Force's overall view is that actual risks based on realistic risk assessment assumptions should guide the remedy selection process. The "national cleanup standards" approach would effectively substitute generic risk assessment considerations for more site specific considerations. This is precisely the concern that the Task Force has with EPA's current practice of selecting exposure factors that result in substantial over-estimation of actual risks. However, if sufficient gradations and flexibility can be built into a national cleanup standard approach, it could prove to be a workable system. A single national cleanup standard for a particular chemical for all sites across the country would be neither rational nor cost effective. However, if there were an allowable range of required cleanup levels based on such factors as current and future land uses, current and future use of groundwater, and other such factors, and if there were built-in provisions for waivers and variations based on other site-specific considerations, an approach of this kind could make sense and could greatly simplify the risk assessment process. It has just come to my attention that the State of Massachusetts has just or will soon adopt revisions to its hazardous waste contingency plan that would essentially adopt this kind of approach. It may merit further study by all parties interested in Superfund reform. Finally, for such a system to be effective, the EPA regional offices (and the States under a delegated program) would have to be given assurance that they are empowered to exercise flexibility without fear of being overridden by higher authorities.

3. Your proposal would add a "tiered approach for determining the stringency of cleanup standards and the necessity for remediation." That seems pretty fuzzy. What precisely do you mean? What would be in the first tier, for example?

RESPONSE: Under its recommendations for "Cleanup Standards," the Task Force recommends adopting "a tiered approach for determining the stringency of cleanup standards and the necessity for remediation." The Task Force goes on to explain that "Under this approach, EPA would evaluate the site conditions, current and future uses, local land uses, and proximity to aquifers when determining what remediation is required in selecting performance standards. Case-by-case determinations should be made." In other words, sites which are current industrial facilities, are projected to remain as industrial facilities for the near future, are surrounded by other industrial facilities, and which do not pose a threat to current or projected drinking water aquifers would probably be placed in the first or lowest tier. Less active remediation and less stringent cleanup standards would apply to contaminated soils and/or groundwater at a site of this kind as

compared, for example, with a site where a contaminated aquifer is the primary drinking water supply for a community and there is no readily available alternate supply to meet the community's projected future needs.

4. Your proposal also would add a requirement for a cost-benefit analysis when selecting remedies -- but the costs are often much easier to estimate than benefits. Would you consider indirect or contingent benefits? Aesthetic improvements? Economic impacts? If so, how would you quantify them?

RESPONSE: The Task Force did not consider or make recommendations as to precisely how cost-benefit analyses should be conducted or the specific factors that should be taken into account. There is a substantial and growing body of literature on the subject, and it may provide useful information. As a general matter, however, indirect and contingent benefits, as well as aesthetic improvements and economic impacts should all be considered in the cost benefit process, just as should the costs and benefits of alternative remedies for the site as well as costs and benefits of alternative risk-reduction projects on which the community might spend its money. In other words, if the primary threat posed by a Superfund site is to the quality of the water in a local river, it would be appropriate to consider whether greater benefits in terms of cleanup of the river would be achieved by spending $25 million to remediate the site permanently, or spending a lesser amount to achieve a somewhat less permanent cleanup of the site and using the remaining monies to install or improve a sewage treatment system for the community.

5. How would you correlate "actual risk at a site with ARARs that reflect those risks," as suggested in your report?

RESPONSE: This question picks up on one of the recommendations under Remediation Issue 3 in the Task Force Report. Entitled "Correlating Cleanup Goals with Risks," the issue of concern was stated as follows: "Every remedy must achieve the same level of cleanliness regardless of the actual risk presented by the site to human health and the environment." This issue is quite complex and requires examination of both the risk assessment process and ARARs.

Under the Superfund program, risk is determined, at least in part, by the preparation of a site-specific baseline risk assessment as provided on the 1990 National Contingency Plan (NCP). EPA guidance states that the primary purpose of the baseline risk assessment is to provide risk managers with an understanding of the actual and potential risk to human health and the environment posed by the site and any uncertainties associated with the assessment. EPA generally uses the results of the baseline risk assessment to establish the basis for

taking a remedial action at a site. Generally, where the baseline risk assessment indicates that a cumulative site risk to an individual using "reasonable maximum exposure assumptions" for either current or future land use exceeds the 10^{-4} lifetime excess cancer risk end of the risk range, action under CERCLA is generally warranted at the site. EPA guidance further states that for sites where the cumulative site risk to an individual based on reasonable maximum exposure for both current and future land use is less than 10^{-4}, action generally is not warranted, but may be warranted if a chemical specific standard that defines acceptable risk is violated or if there are non-carcinogenic effects or an adverse environmental impact that warrants action. It is stated that a risk manager may also decide that a lower level of risk to human health is unacceptable and that remedial action is warranted where, for example, there are uncertainties in the risk assessment results.

The risk assessment may not assume that institutional controls or fences will account for risk reduction. For non-carcinogenic effects of toxicants, unacceptable risk occurs when exposures exceed levels which represent concentrations to which the human population, including sensitive sub-groups, may be exposed without adverse effect during a lifetime or part of a lifetime, as appropriate to address teratogenic and developmental effects.

Finally, chemical specific standards that define acceptable risk levels (e.g., non-zero MCLGs, MCLs) also may be used to determine whether an exposure is associated with an unacceptable risk to human health and the environment and whether remedial action is warranted. For groundwater actions, MCLs and non-zero MCLGs will generally be used to gauge whether remedial action is warranted.

Under the current NCP, there is no process for correlating the actual risks at a site with ARARs that address those risks. The baseline risk assessment assumes no cleanup activity has occurred or will ever occur at the site. At some sites there are significant factors that should be considered in the risk assessment. For example, at the Somersworth Landfill, it is believed that the vast majority of the contaminants have been flushed out of the landfill and their concentrations have been and continue to be dramatically reduced by naturally occurring attenuation/biodegradation processes in the downgradient wetlands. In addition, the fact that a public water supply system is available to all developable land in reasonable proximity to the landfill was deemed irrelevant in delineating the risks that the ARARs are to address. A related issue is that site-specific analytical data on actual impacts are generally ignored or severely discounted in developing the exposure scenario, with a disproportionate emphasis on the <u>potential</u> exposures and risks.

Once a decision is made that a remedy is needed for a site, whether it be based on the results of the baseline risk assessment or other considerations that are set forth in EPA guidance documents, the remedy must be protective of human health and the environment (i.e., within the acceptable risk range of 10^{-4} to 10^{-6}) and meet all federal and state ARARs.

Under the current risk assessment process, actual risks are not determined, due in large part to the failure of EPA to consider institutional controls or the fact that cleanup activity has already occurred at the site. Requiring ARARs to be met at sites where the actual risk is overstated results in an excessive remedy. Perhaps one way to correlate actual risk at a site with ARARs is to do away with the "relevant and appropriate requirements" portion of ARARs as has been suggested by others, including Dr. Edwin Clark. I believe he has already testified before this subcommittee and has stated that "By eliminating the RARs requirement, cleanups would be guided by those regulations that are truly applicable to each site and by the actual risks. This would ensure the protection of human health and the environment while eliminating extraneous cleanup goals that currently drive up costs and slow cleanups."

6. You suggest waiving the need to comply with ARARs when cancer risks fall within a certain range. What about all the other threats to human health we have heard about, like neurological, reproductive, and developmental disorders -- would your proposal ignore these other risks?

RESPONSE: The suggestion that there be an ARAR waiver where lifetime cancer risk levels are within the acceptable risk range obviously can only apply to sites where carcinogens are the contaminants of concern. As indicated in the response to Question 5, above, the risk assessment process must also take into consideration non-carcinogenic effects of toxicants. EPA guidance states that for non-carcinogenic effects of toxicants, unacceptable risk occurs when exposures exceed levels which represent concentrations to which the human population, including sensitive sub-groups, may be exposed without adverse effect during a lifetime or part of a lifetime, as appropriate to address teratogenic and developmental effects. It should be noted that the Task Force's recommendation with respect to ARAR waivers did not specifically take into account non-carcinogenic threats to human health. Our experience in New Hampshire with Superfund sites has not led us to have significant levels of concern about other kinds of disorders. However, if the risks of other kinds of disorders were sufficiently low, it may also be appropriate to waive ARAR compliance in those instances.

7. Please provide a copy of the document prepared by the New Hampshire state environmental agency you referred to at the hearing, stating that it would cost the state one-tenth of what it costs EPA to do exactly the same cleanup.

RESPONSE: Attached is a copy of a 3-page document prepared by the New Hampshire Department of Environmental Services entitled "Comparison of State vs Superfund Corrective Action Process." The three pages provide examples of three different kinds of sites: landfills, sites with minor groundwater impact, and large sites. The comparison does not claim, and I did not represent to the Subcommittee that "exactly the same cleanup" is being achieved under the two alternative corrective action processes. Rather, equivalent levels of protection of human health and the environment are being achieved, generally at a cost that is an order of magnitude lower under State of New Hampshire as opposed to Superfund corrective action processes.

COMPARISON OF STATE vs SUPERFUND CORRECTIVE ACTION PROCESS
EXAMPLE - LARGE SITES

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

SITE	STATE	SUPERFUND	COMMENTS
STATE LUST SITE Northwood Ridge • Numerous wells contaminated • Glacial till over fractured bedrock • Residential setting • Extensive dissolved plume • Gasoline contamination	• Complete alternate water system constructed by RP • Contaminated soil removed by RP • RP's long term remedial plan is to contain groundwater plume near source and natural attenuation of rest of plume • Recognized practical limitation and costs of active measures in glacial till and bedrock		• Outcomes are the same • State process prioritizes expenditures for active groundwater remedies to areas where ground water has greatest value and use is expected • State process encourages private parties to assume responsibility
SUPERFUND Tibbetts Road • Numerous wells contaminated • Glacial till over fractured bedrock • Residential setting • Extensive dissolved plume • Solvent and BTEX contamination (no DNAPL)		• Complete alternate water system constructed by USEPA • Contaminated soil removed by State • Superfund long term remedial plan is to restore all groundwater using active measures • Remedial strategy is to attempt complete restoration despite technical limitations • Responsible party willing to assume responsibility for water system and limited ground water control but Superfund remedy is not flexible • Estimated costs of additional treatment of ground water is $8 m	• State process focused on practical solutions and incremental benefit (value) of more aggresive remedies • State process allows greater flexibility in remedy time-frames where risks are low and ground water plumes are managed • State has institutional controls for entire corrective action process • State corrective action process applies to all sites regardless of program

COMPARISON OF STATE vs SUPERFUND CORRECTIVE ACTION PROCESS

EXAMPLE - LANDFILL

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

SITE	STATE	SUPERFUND	COMMENTS
SUPERFUND SITE LANDFILL 5 - PEASE AFB • 23 acres • Municipal waste from on-base residents • Shallow soil over fractured bedrock • Municipal water available • No use of groundwater • Low VOC's in groundwater	• Presumptive remedy is Subtitle D cap with natural attenuation and reduction of plume over time • State institutional control of groundwater plume • Similar to solution at approx. 150 landfill sites in State • Prioritize source containment • Remedy costs $2.3-3.5 million ($100-150 K/acre)	• Despite presumptive remedy a full RI/FS investigation was conducted • RCRA C cap mandated • Remedy costs $20 million ($870 K/acre) • Substantial amount of data collected during RI not used in decision (no value added)	• Investigation can be focused (less time and money) if presumptive remedy is known • State has more experience with similar sites • State option achieves same performance for less money • State option promotes consistency across all programs • Expenditures can be prioritized based on groundwater use and value as assigned by the State • Achieves same ultimate goals • State process more focused and pragmatic • State provides clear guidance and emphasizes performance based outcomes • Immediate human health and environmental problems can be quickly abated, greater flexibility to achieve long term goals
STATE MUNICIPAL LANDFILLS • Presumptive remedy — Subtitle D cap — Containment of plume (active and passive) — Other impacts mitigated (gas and surface water) — Remove discrete sources (drums) • Focus on source control • Waste in contact with groundwater removed	• Costs $100-200 K/acre • Solutions performance based • Little emphasis given to impractical alternatives (complete removal or incineration) • Groundwater treatment only required to contain plume • Experience with natural attenuation	• Not involved with state landfills • 3 NPL municipal landfill remedies include — RCRA Cap — Long-term pump and treat to restore groundwater — $1 M/acre	

COMPARISON OF STATE vs SUPERFUND CORRECTIVE ACTION PROCESS
EXAMPLE - SITES WITH MINOR GROUNDWATER IMPACT

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

SITE	STATE	SUPERFUND	COMMENTS
SUPERFUND SITE Holton Circle — Bedrock water supply wells impacted w/ low VOC's — No discrete source — Concentrations reduced over time		— Conducted full RI/FS investigation — Not focused on a presumptive remedy — Time consuming and conservative approach (drinking water standards were achieved during process) lead to collection of data not needed to make decision — Ultimate remedy is natural attenuation and monitoring — Estimated costs $6 million	• State approach more cost effective • State-site: Responsible party assumed responsibility to manage site • State-site:Responsible party solved problems and had liability defined • State investigation limited to "value added" information for decision • State-site: Lower transaction costs (legal and investigation) and more applied to practical remedy • State used professional judgement and assumed reasonable risk • Superfund process assumed "no risk" and cost more with same end result
STATE Chandler Ave. — Bedrock water supply well impacted — No discrete source present — Point of entry treatment system provides alternate water to abate immediate problem	• Focus to reduce state active role and transfer to responsible party • Responsible party assumed the responsibility to maintain alternate water • State role reverted to regulatory responsibility to ensure water provided to affected public and plume management (natural attenuation and monitoring) • Responsible party unsuccessfully tried to distract focus to other potential sources • Costs to date $100 K and responsible party holds permit for future work		

Testimony
of
Velma M. Smith
Friends of the Earth

before the

Senate Environment and Public Works Committee
Subcommittee on Superfund, Recycling and Solid Waste Management

Superfund Reauthorization
Remedy Selection

September 30, 1993

Good morning, Mr. Chairman, Members of the Committee. I am Velma Smith, Director of Friends of the Earth's Groundwater Protection Project. Friends of the Earth is a national, nonprofit organization that works -- in concert with affiliates in over 30 countries across the globe -- on environmental and energy issues.

On behalf of Friends of the Earth, I thank you for this opportunity to testify, and I thank you, Mr. Chairman, for allotting the time for two hearings on the issues of Superfund remedy selection. In our view, remedy selection may be **the** most important topic in the Superfund reauthorization debate -- more important in some respects than the contentious debates on liability.

If the wrong decisions are made on remedy selection, this Congress could break faith with hundreds of communities waiting for cleanup; it could close off future opportunities for full use of land and water resources in many locales; and it could burden belt-tightened government bureaucracies with thousands of sites that will require vigilant oversight for many years and decades.

Unfortunately, deriving the precise prescription for protective, cost-effective and permanent remedies is no easy task -- though some calls for reform seem to imply as much.

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Jane Perkins, President

I hope that the comments I will offer this morning are helpful in your difficult deliberations.

In the brief time we have, I would like to touch on several areas related to remedy selection, including risk assessment, soil cleanup, land use controls, groundwater cleanups in general and Dense Non-Aqueous Phase Liquids more specifically.

Superfund Sites Do Pose Health Risks

Before I address any of these issues, however, I would like to start with the area that others end up at: health threats from Superfund sites.

You have been hearing for years that the remedies selected under the Superfund program are too costly, too costly because the risks are not great. You have also heard that while the technologies for groundwater cleanup don't work, that failure is of minor consequence, because the risks of the pollution that can't be put right are really very small.

That, in our view, is wishful thinking. I too wish it were true, but none of us can or should be assured that it is.

The debate on Superfund has been framed as if scientists have witnessed in the last few years a major ground shift in what we know about toxic chemicals and human health. This is simply not true.

In the field of environmental health, there has been no parallel to Galileo turning the world of astronomy on its head with a revolutionary theory that the earth revolves around the sun. There has been no startling new discovery which tells us that environmental toxins are benign.

Controversy abounds, as it always has in this field and probably always will. But the past decade's concerns about chemical exposures have not been cast aside as foolish by the mainstream of scientists. On the contrary, it would appear that evidence is mounting that exposure to environmental toxins is injurious to public health.

Consider information presented earlier this year by Dr. Barry L. Johnson, Assistant Administrator of the Agency for Toxic Substances and Disease Registry. Among the studies which Dr. Johnson referenced were the following:

> A 1983 study in New Jersey found elevated levels of cancers of the esophagus, stomach, colon and rectum in counties surrounding hazardous waste sites. The variables most frequently associated with gastrointestinal cancer mortality rates, in this study, were population density, degree of urbanization, and presence of toxic waste disposal sites.
>
> A 1989 study looked at nearly 600 hazardous waste sites in 49 states where there

was evidence that contaminated groundwater was the sole source of water supply. Significant associations were found for cancers of the lung, bladder, esophagus, stomach, large intestine, and rectum for white males; and for cancers of the lung, breast, bladder, stomach, large intestine, and rectum for white females.

A 1992 study of congenital malformations in New York indicated that "...maternal proximity to hazardous waste sites may carry an additional risk of approximately 12% of bearing children with congenital malformations."

Another 1992 study of reproductive outcomes in New Jersey associated dichloroethane with major cardiac defects; dichloroethylene with central nervous system defects; trichloroethylene with neural tube defects and oral cleft defect, and carbon tetrachloride with low birth weight, intrauterine growth retardation, central nervous system defects and oral cleft defects.

A study by the California Department of Health Services evaluated births in the two-year period between 1983 and 1985. "The study concluded that maternal residence at the time of the child's birth, in a census tract with a hazardous waste site, significantly increased the risk of giving birth to infants with malformations of the heart and circulatory system."

Dr. Johnson's testimony also speaks to health data on trichloroethylene (TCE), a chemical which makes the top ten list for occurrence at Superfund National Priority List sites. According to the National Research Council, "a chain of evidence" links TCE to cardiac anomalies, and extensive animal studies "demonstrate a range of other effects of TCE from reproductive impairment to effects on DNA...." A link in this chain comes from ATSDR's National Exposure Registry, which attempts to track reported adverse health effects in persons who have been exposed to hazardous substances. Registry information on nearly 5,000 individuals with documented exposure to trichloroethylene shows health problems in excess of those reported by the general population, including anemia, diabetes, hypertension, stroke and urinary tract disorders.

The National Research Council's 1991 volume, **Environmental Epidemiology**, cites a host of other health concerns associated with hazardous waste exposure and notes that "...there is evidence that neurologic, hepatic, and immunologic functions can be damaged by exposure to drinking water contaminated with toxic chemicals."

Uncertainty Demands Care

In bringing these unsettling findings to your attention, do I imply that these various study results constitute ironclad evidence of causation? Certainly not.

Ironclad evidence is a commodity in short supply in the field of environmental epidemiology. There remains much that we do not know about the fragility of health and

the workings of disease. The tools for unraveling the mysteries of human health effects are not as powerful or precise as needed, but they are improving.

"The evolution of chemical production in the United States," in the words of Prout, et al, "has outstripped the evolution of knowledge of health effects."

Thus, no one can sit here today and quantify the risk associated with the nation's Superfund sites. In fact, uncertainty of dose-response curves aside, it may well be that none of us could accurately predict even the number of National Priority List sites that we might have a decade from now. As we engage in debate about risks and risk assessment, we would do well to keep in mind these limitations on our predictive abilities.

A disquieting level of uncertainty and an inability to quantify should not serve as rationale for inaction, however.

The uncertainty and the issues at stake underscore the validity of the fundamental notions behind the Superfund law:

> Act quickly, remove contaminants from the environment, and employ the best technologies available to assure that clean stays clean and that the arduous task of cleaning up can actually be declared complete at some point in time.

Unfortunately, in 1993 it appears -- not that the Superfund goals of protection and permanence were off the mark -- but that the magnitude of the messes that have been made has been grossly understated and the capabilities of the cleanup technologies vastly overrated.

The course is not wrong, but much harder and longer than what we predicted. And now reform of Superfund should take place with the benefit of a decade's worth of sobering experience.

My counterparts in industry draw different lessons from our Superfund experience, however. They do not appear to enter this debate with remorse for the messes and regret for the miscalculations and mismanagement which have yielded closed drinking water wells, fish consumption restrictions or truckloads of contaminant-laden soil. Instead, they bring a righteous indignation that Congress would impose a task so costly and so difficult.

The program, not the pollution, has been made the culprit. That approach to the debate, in our view, is unconstructive and irresponsible.

Risk Assessments Are Not "Overly Conservative"

Despite the unknowns, the PRP or Potentially Responsible Party community

appears firmly convinced of the ability of quantitative risk assessments not just to yield perspective but to dictate straightforward cleanup answers. The stumbling blocks to rational decisions and expeditious cleanups, they argue, can be found, not in real-life uncertainty and complexity, but in the approaches that EPA has used for risk assessments at individual Superfund sites.

According to many critics, EPA -- either through sheer incompetence or misguided environmental zeal -- has adopted approaches which are "ultra-conservative" and invalid. As the arguments go, conservative and scientifically invalid become synonymous.

First, let me respond by noting that these critics are guilty of precisely the same deception they accuse the Agency of: muddling the value decisions of risk management with the calculus of risk assessment.

The use of conservative or even so-called "ultra conservative" values is not invalid or unscientific on its face.

A decision to use worst-case assumptions, average risk assumptions or some other value is correct or incorrect only in the context of the risk management policy that has been adopted. "[L]ower bounds, averages, upper bounds, and other ways to express uncertain information all have legitimate roles to play depending on the costs of making errors," explains Adam Finkel of Resources for the Future. "[N]one is technically or morally superior to any other unless the context is specified."

In the case of Superfund, if the Agency is directed to protect all of us, then its arithmetic must use worst-case assumptions. If the Congress decides, instead, to offer protection from environmental hazards only to some, then average or lower bound statistics may become appropriate.

These sorts of policy decisions are difficult and value-laden; they touch on fundamental notions of the role of government and sensitive questions of ethics. They can't be sanitized and reduced solely to numerical puzzles. And you as policy-makers cannot be shielded from them by looking for scientifically objective answers in a vacuum.

Second, we take issue with the proposition that EPA risk assessments are, overall, highly conservative. There are many reasons why that is not the case. Let me discuss just a few of those.

Risk assessments are based on a subset of chemicals, not the full complex of chemicals present at Superfund sites. This simplification is necessary, in part, because of limitations in analytical capabilities. Some chemicals can be detected down to relatively low levels. Others are not analyzed or adequately characterized; these include

unintended byproducts of manufacturing or other chemical mixing.[1]

According to William Alley of the U.S. Geological Survey, "...VOCs detected in ground water may often be the 'tip of the iceberg' when complex contaminant sources are nearby...."

But risk assessments cannot assess the risks of unknowns, so risk assessors work from lists of chemicals not real-world mixtures.

And even the lists of known chemicals that drive a risk assessment may be pared down to a manageable number of indicator chemicals. Chemicals for which no data exist are eliminated, and risk assessors select for further analysis those individual chemicals which would appear to be the most problematic. This simplification may be necessary from the standpoint of workability, but it must be recognized as a fundamental decision point which introduces a non-conservative element into the very foundation of risk assessment work.

Non-conservative simplifications are made at the other end of the risk assessment spectrum as well. EPA frequently treats all humans or, at best, all children and all adults as equally susceptible to harm. According to Edward Calabrese and others, such individual differences as age, sex, genetics, nutrition and preexisting conditions may affect an individual's susceptibility to harm from toxic substances.[2]

Unfortunately, Calabrese is correct. "The extent or magnitude to which predisposing factors enhance susceptibility to toxic substances is known only to a limited extent." Risk assessors may be off the mark when it comes to protecting particular populations, but -- at least for now -- there is scant data to suggest the size of any error.

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[1] A 1987 study of hazardous waste site leachates, for example, found that only a few percent of the total organic carbon content of the mixtures of the 13 sites studied could be identified. The greater percentages of chemicals were simply unknown and uncharacterized. In addition, at the Stringfellow Acid Pits in California, regulators originally focused their efforts on a group of volatile organics (VOCs), including TCE. After working with the site for some time, however, California health officials recognized that the sum of the concentrations of detected contaminants was much less than the total organic halogen concentration. Significant analytical work was required to determine that the contaminated groundwater included high concentrations of apparent acid byproducts of DDT manufacture.

[2] The Society for the Advancement of Women's Health Research, for example, has argued that "...risk assessments have been seriously flawed by gender bias in many areas, including the evaluation of the dose received by an individual, the underlying toxicity of a chemical, and the potential for interactive effects with substances taken specifically by women...." In the few cases where gender-related differences have been studied in animals, notes the Society, "...it appears that females absorb higher doses of the chemical toxicant than males." If those studies are correct and applicable to humans, then EPA risk assessments may be non-conservative for women.

And what of the infamous EPA assumptions about children who eat dirt for breakfast, lunch and dinner? Well, in some particular risk assessments EPA may have chosen relatively conservative values for childhood soil ingestion, but on the whole, I would venture that EPA appears to be within the range of reasonable judgements on this point.

EPA has stated 200 mg/day as a default assumption for childhood soil ingestion -- as have the soil cleanup programs in New Jersey and Washington State. That number would not appear to be out of line with a range of estimates reported in 1987 by Calabrese of 10 mg/day to 10,000 mg/day. More recent data may indicate that the 200 selection could be more conservative than previously thought, but it does not invalidate the selection.

Although soil ingestion values have generated a storm of controversy and debate, soil ingestion is but one in a myriad of variables that must be accounted for in some fashion in a risk assessment.[3]

PRPs have cried loud and long about a few of these variables for which EPA may be making conservative judgements in the absence of solid, site-specific data, but in the words of Adam Finkel, they choose to "...ignore a body of evidence strongly suggesting that as a whole, neither exposure assessments nor dose-response assessments have seriously exaggerated their final outputs."

Risk assessment, then, is the process that polluters love to hate. It is malleable; it is complex and arcane; it is virtually inaccessible to the general public. Risk assessment can be criticized at the very same time that it is manipulated. Thus, it should come as no surprise to hear EPA staff state matter-of-factly that "...negotiations with responsible parties often turn into lengthy arguments over risk assessment methods and assumptions."

National Soil Protection and Cleanup Standards Can Speed Cleanups

Friends of the Earth believes that Congressional reforms of Superfund should seek to put some limits on these resource-intensive yet uncertain exercises. You can do so in several ways, the most important of which may be to require EPA to issue soil cleanup standards.

We believe that the last reauthorization's notion that Superfund cleanups should conform to Applicable or Relevant and Appropriate Requirements or ARARs was reasonable. But ARARs have not worked, in part, because we have no national standards for soil cleanup.

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[3] See, for example, the attached appendices from EPA's Superfund Exposure Assessment Manual; note that the long list of parameters does not include factors relating to groundwater contamination.

Congress could cut short that piece of Superfund delay that derives from protracted risk assessment debates on soil exposure pathways by directing EPA to issue national soil cleanup standards. In our view, these standards should be based on reasonable worst case assumptions and intended to protect sensitive subpopulations.

My colleague Linda Greer spoke to you earlier this month about how such a proposal might work, and we urge you to heed the Natural Resources Defense Council's useful suggestions.

We also urge you to consider infusing this beleaguered program with a bit of preventive medicine, and in the hopes of keeping future NPL lists shorter, we recommend that the reauthorization require EPA to either develop a distinct set of soil protection standards that will govern ongoing industrial operations or apply the appropriate soil cleanup standards prospectively to active facilities.

Surely, it strikes others as odd that while we tear our hair out in furious debate about what level of soil contamination should be cleaned up, our federal regulatory scheme is absolutely silent on the need to stop using soil as receptacle for waste.

Scientists Have Been Too Optimistic, Not Too Conservative, In Predicting Groundwater Problems

Soil protection standards are needed not only to protect individuals from the hazards of direct contact, ingestion, or inhalation of contaminated soils but also to protect groundwater resources from further degradation.

If, in the last decade, there has been a paradigm shift, it has not been in the field of environmental epidemiology but in the science of groundwater. That paradigm shift has been presented to you as somewhat narrow: We thought groundwater could be cleaned up; it can't.

The reality here is a bit more complex.

The contamination of groundwater, according to a 1988 volume of technical papers, "was born of a perception that subsurface systems possess unlimited capacities to accept and degrade organic chemicals introduced either accidentally or intentionally by disposal operations. This perception is now recognized as having been unfounded...."

A noted West German hydrogeologist explains that when a variety of chlorinated hydrocarbons were discovered in groundwater just a little over a decade ago, their presence appeared "rather contradictory."[4]

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[4] "[T]he prevailing opinion," says Friedrich Schwille, "was that CHCs would not be capable, because of their volatilities, of penetrating deep into the subsurface."

So-called "conservative" predictions of contaminant movement in the earth's subsurface, it turns out, were not conservative enough.

And today we find that groundwater contamination -- once thought to consist primarily of localized anomalies -- is widespread. The resource that feeds flow to rivers, streams and wetlands, serves as drinking water supply to nearly 117 million Americans and provides approximately 33 percent of agriculture's irrigation water and 17 percent of freshwater for self-supplied industries, is not in good shape. Contamination plumes which extend from just under a mile to six miles from their source are now, according to John Cherry and Douglas Mackay, "common."

Among the chemicals most widely implicated in today's groundwater problems -- which as you know manifest themselves in over 70 percent of NPL sites -- are Dense Non-Aqueous Phase Liquids or DNAPLs.

DNAPLs, such as chlorinated solvents, wood preservative wastes, PCB oils, coal tar wastes and a variety of pesticides, are denser than water and, generally, not highly soluble in water. They move in separate phase from the groundwater in the subsurface, and they have defied many predictive models and eluded site investigators, because they can dive deep into the subsurface in "erratic" patterns and remain in pools and fingers that will serve as continuing underground sources of pollution for many years.

"Even with a moderate DNAPL release," says EPA, "dissolution may continue for hundreds of years or longer under natural conditions before all the DNAPL is dissipated and concentrations of soluble organics in ground water return to background." Very small volumes of DNAPLs have the capacity for creating enormous groundwater problems. These problems are very difficult to fix with today's technologies.

Though a halo of dissolved contaminants will form around and move from the contamination source which fills pore spaces and sits in pools above less permeable strata, the mass of the contaminant will resist movement, even under pumping conditions. The factors that once appeared to translate into a low likelihood of contamination ever reaching the saturated subsurface become the enemies of cleanup once contamination has occurred.

Thus, predictions of required groundwater pump and treat durations have been wrong, sometimes decades wrong. These errors and the prospect of tens or even hundreds of years of pump and treat have been translated broadly into a rhetoric that says groundwater cleanup is impossible.

While complete aquifer restoration at DNAPL sites is theoretically possible, full restoration with today's technologies -- at **some** DNAPL sites -- will undoubtedly take enormously long time-frames, time-frames that were never contemplated by Superfund drafters. DNAPLs are clearly very difficult to remedy. They are also extremely difficult

to locate and fully characterize, and these difficulties are frequently overlooked in discussions about long-term DNAPL containment.

Advances in DNAPL Cleanup Should be Encouraged Not Stifled

Friends of the Earth believes that our response to the DNAPL problem must involve more than giving up the law's goals for groundwater cleanup. Opting for a contamination holding-pattern will only allow our groundwater problems to worsen while innovation in cleanup technology is halted.

Instead, we recommend a DNAPL strategy which

* protects potentially affected water users, including surface water users where groundwater discharges to rivers, streams or wetlands;

* assures that incentives for advancing DNAPL cleanup technologies are not diminished;

* provides for the maximum remediation possible, including effective containment and reduction of the mass of contaminants present in the subsurface as well as remediation of the dissolved fractions of DNAPL plumes;

* greatly improves site characterization efforts to assure that cleanup is optimized and that any containment strategy is fully effective for as long as residual DNAPLs remain as a continuing source of contamination in the subsurface;

* assures that the PRP and not the local community or the trustfund bears the full cost of ongoing containment and monitoring efforts; and

* prevents further DNAPL contamination of the nation's groundwaters.

To accomplish these goals, Congress should, first, retain Superfund's requirements for groundwater cleanup to drinking water standards but call for a special EPA initiative that will require a rigorous evaluation of sites for residual DNAPL problems.

EPA can, under current law, make feasibility waivers available for intractable DNAPL problems, but it must do so **only** where there is extensive and compelling evidence that cleanup strategies will not be effective in a time-frame of less than 25 to 50 years. For any site at which such a waiver is invoked, EPA should collect an upfront payment from the PRPs involved that will offset the expenses attendant to long-term management of the site.

In order to assure adequate assessments of DNAPL sites and to optimize on what can be achieved by today's technology, in terms of both containment and restoration, we

recommend that EPA be directed to establish a sitting committee of technical experts drawn from the academic community. This committee should serve as quality assurance advisors for individual site management and for Agency-wide DNAPL activities, including the possible reevaluation of any EPA groundwater models which may yet incorporate improper assumptions about DNAPLs. Funding for such a committee should come from payments made by PRPs who are granted technology waivers.

These monies should also fund a special initiative to engage the affected communities in decision-making about and monitoring of these sites. We believe that for any site for which DNAPLs are implicated, Technical Assistance Grant funds should be made available -- not once but on an ongoing basis -- to community groups who wish to follow the progress of site containment and cleanup.

To assure that we do not continue to add to the problems of DNAPLs in groundwater, we ask you to consider amending the law's right-to-know reporting requirements to provide for improved disclosure of all DNAPL releases, adding all appropriate chemicals to the list.

We recommend that you also draft provisions that will require any PRP with an identified DNAPL site to provide the Agency with a list of all other facilities managing DNAPL products or wastes under its ownership or control. Environmental audits and DNAPL-specific pollution prevention plans for each such facility should become mandatory.

In addition, we urge you to mandate that the Agency propose and then promulgate by date certain rules that will provide for phase-outs of DNAPL products on as expeditious a schedule as possible. Such a mandate should include a hammer provision that bans -- at a minimum -- the most frequently detected DNAPLs, if the Agency fails to act.

Finally on DNAPLs, we recommend that you impose a fee on production of the most frequently detected DNAPLs, and that monies collected in that manner fund research and development on DNAPL cleanup technologies as well as improved institutional capacity within the Agency to investigate and respond to DNAPL releases.

Institutional Controls Will Incur Costs and Difficulties

As the story of DNAPLs in groundwater clearly illustrates, the challenges to the Superfund program are enormous. In the face of these challenges, there is one more "quick fix" placed before you.

Some argue that the Superfund program's ills could be cured, in large measure, by substituting institutional controls on land use and groundwater in place of onerous cleanup requirements. The notion of opting for land use controls and water use restrictions in lieu of cleanup technologies is posed to you as a "sensible proposition" to

save "society's" scarce dollars.

Again, however, we caution a detailed look at this proposal before it is embraced. For in some cases, total remediation costs may be cut by relying solely on monitoring. But elsewhere,procrastination will eventually prove itself costly, and groundwater monitoring will only confirm that expensive remediation action will have to be undertaken.

For any consideration of the role of institutional controls in the program, we ask this Committee to look at who saves money and who pays under such a scheme -- to look at who really assumes the burden of risk associated with long-term management of the site. We urge you to look at who it is that will be available and solvent years or decades from ROD signing dates and who, in reality, will conduct monitoring and remain financially responsible for taking action, if monitoring indicates that something more than testing must occur or if institutional controls fail.

We urge you to be very cautious about any statutory changes that would promote reliance on land use and groundwater controls in the place of cleanup. Such changes could work as incentive for further delay, shifting responsibility for cleanup from those who participated in its making to innocent parties and stifling the much needed research investment that the demand for cleanup options has spawned.

At the same time, however, we recognize the inevitability of such restrictions in certain cases -- even cases with cleanup proceeding. Institutional controls -- restricting access to sites, restricting land use and restricting water withdrawals -- have become essential elements of the Superfund program. The degree of harm already done to our environment has made such controls absolutely essential, at some sites, to assure the protection of public health.[5]

Given this reality, we ask you to consider changes to the law that will assure improved accountability and smooth functioning of institutional controls over long periods of time, changes that will bring better protection and a stronger voice to the neighbors of these sites. The challenges this task presents differ somewhat for groundwater and land use controls, so I would like to address them separately.

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[5] Today, reliance on institutional controls is common. In its 1991 survey conducted for ATSDR, the National Governor's Association, for example, found 2,302 sites with some form of restrictions on access,land use, groundwater use or surface water use. Of the 2,302 sites, 651 are on the NPL. The 1991 survey showed an increase in reported sites with land use restrictions in comparison with the results of a 1987 survey.

A cursory review of Superfund Record of Decision Summaries for 1982 through 1990 likewise shows some form of institutional controls on land use, restrictions on groundwater use and/or long-term monitoring of groundwater is noted in many RODs.

Writing Off Groundwater Will Require Federal Government Involvement In Issues of Water Quantity

Groundwater is not stationary. Though it is clear that -- for the most part -- groundwater moves slowly; it does move. Groundwater can move in inches per year or miles per day in karst limestone areas. Contamination plumes, likewise, may move at varying rates; contamination can and has spanned long distances.

At one level, it is clearly possible -- given sufficient resources to fund sufficient study -- to make reasonable predictions regarding how groundwater will move under certain conditions. But as the earlier DNAPL discussion implies, it can be even more difficult to predict -- with any degree of certainty -- how contaminants will move.

In the words of Clinton Hall, Director of the Environmental Research Laboratory in Ada, Oklahoma,

> *The world still views ground water...as though the subsurface environment were a big, uniform, homogenous sand box. This is true to a disturbing degree even among practitioners in the ground-water industry. ...Most of the predictive models for contaminant transport in ground water that we have today start out with the assumption of a uniform, homogenous, isotropic porous medium. The subsurface is rarely, if ever, uniform, homogenous, and isotropic, and only a fraction of ground-water systems are in porous media.*
>
> *Most often, procedures for characterizing a contaminated site rely almost exclusively on chemical analyses of ground-water samples, with only limited understanding of the aquifer matrix in which the ground water exists. The subsurface environment is a complex system, subject to extensive physical, chemical, and biological variations within small vertical or horizontal distances.*

Simply put -- it is easy to be wrong.

And added to these complexities of a non-homogenous subsurface are the difficulties of changing conditions over time, in particular changing pumping conditions.

Over the years, demands on water in general and groundwater in particular have grown. From 1950 through 1980, U.S. groundwater consumption tripled, and water experts in 1980 were predicting another doubling of its use in the period from 1980 until the year 2000. The task of predicting just where and when those future demands will occur should not be underestimated.[6]

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[6] While the groundwater resource is vast, only a small portion is reasonably available today for drinking water purposes. In some areas, the depth of groundwater and the costs of drilling and operating pumps are limiting factors in water availability; in other areas, natural contaminants, such as iron, sulfate, fluoride,

Tracking this moving target will not be easy. For those of you who are inclined to abandon groundwater cleanups in favor of groundwater controls, we ask you to critically consider the workability of a program that places the federal government in the position of controlling, over long periods of time, the use of a resource which moves in complex patterns and is difficult and expensive to characterize and to monitor, a resource which responds to changing points of recharge and discharge, including pumping wells.

Consider the situation in the San Gabriel Valley of California, where contamination is widespread throughout the water basin, contamination plumes cover 40 square miles and pollution has been documented at depths of 500 to 700 feet, EPA and others involved in the search for a solution have learned that the control of water pumping can be complex but critical. In this case -- probably one of the Superfund program's most intractable problems -- there are about 275 public water supply wells operated by about 45 different water purveyors and about 20 industrial or commercial operations with self-supplied groundwater usage. The basin serves as a drinking water source to more than a million people.

Years of struggle on this site have revealed that various decisions to close wells, to blend or treat contaminated water, or to relocate wells have affected groundwater flow patterns, drawing contamination into uncontaminated areas. In the words of a Department of Health official from the State of California, "...water suppliers could be a factor in the spread of the contamination."

In other words, the potential, indeed the likelihood, of changing pumping patterns over time adds complexity and difficulty to the effective management of sites at which contamination will not be remediated in the near term. Effective management of pollution will require reasonable predictions -- not only about groundwater and contaminant flow -- but also about changing water demands in a community. It will be necessary in many instances not only to predict demand for drinking water but also to predict use for irrigation, livestock watering or industrial purposes.

Such efforts will require control as well as forecasting. That path will not be easy or free of controversy.

Long before today you've heard concerns about the federal government entering the arena of water quality controls. You've heard these concerns from some of those who today would appear to advocate water quantity restrictions in lieu of groundwater

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radon or arsenic, present aesthetic or health problems that render large portions of the water undesirable for drinking; and -- as clearly shown by the Superfund experience, the RCRA corrective action program, the EPA Pesticides in Drinking Water Survey and numerous state and local studies on contamination -- more and more groundwater has been contaminated by human activities.

cleanup.[7]

Friends of the Earth has never subscribed to the notion that the federal government should cede its interest in maintaining the quality of groundwater simply because the states have been and will likely remain the principal arbiters of water quantity conflicts. Rather, we have and will continue to press a more aggressive role for the federal government in controlling groundwater discharges from a wide variety of activities.

We find it a sad commentary, however, that Congress might entertain treading on this controversial arena not in an effort to do better in pollution prevention but simply to save responsible parties the expense associated with harmful environmental practices.

From all that we have been able to determine, it appears that some authority to close wells and prevent the use of contaminated water for public drinking water supplies or, in some cases, for private water supplies, resides with public health agencies at local or state levels in many jurisdictions. The authorities for controlling pumping rather than drinking water use appear to be far less uniform; under the complex patchwork of state water laws, EPA may be powerless in many instances to exercise control or to order others to do so. In the San Gabriel Valley, for example, EPA concluded after years of investigation and reaction to spreading contamination, that the creation of a new agency to provide coordinated control of water withdrawals was critical to cleanup progress on this huge Superfund site.

We urge you, therefore, not to write off groundwater resources and not to accept long-term institutional controls on groundwater use simply for the sake of saving identified PRPs a pricey bill for environmental errors.

In cases where it is clear that technology will not allow full cleanup for the foreseeable future, we cannot simply throw up our hands in frustration and hope for

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[7] For example, representatives of the American Mining Congress testifying in 1988 before this Committee argued against a federal role in groundwater quality that might peripherally involve water quantity issues.

Bruce Leavitt, a hydrogeologist with Consolidation Coal Co., spoke on behalf of the AMC arguing that reduction of pumping could be considered "a compensable taking" in a state which was governed by the "absolute dominion" form of water law. A memorandum offered as an attachment to that Senate testimony also asserted that the "right to ground water is generally recognized to be a property right. Such water rights are entitled to the same constitutional protections as any other property right," argued the memo.

Also in 1988, the Western States Water Council, argued against a significant federal role in groundwater protection. According to the Council, "[o]nce a [groundwater] permit is issued, the permittee has a legal right, considered a constitutionally protected property interest, to withdraw a certain amount of ground water for beneficial use."

scientific advancements in another time-frame. In those instances, site characterization and continued monitoring must not be undertaken with a least-cost approach. PRPs must be required to use the full "state of the science" to assure plume containment, to protect water users from harm and to safeguard surface water sources as well.

Water users who suffer damage should be adequately compensated, not made to share in the price of pollution, and those who use water supplies for livestock watering or other critical non-drinking water uses should not be overlooked or short-changed. Local communities should be not only informed but also provided with tools and resources for becoming meaningful participants in ongoing site management decisions.

We also urge the Committee to assure that the Agency has the mandate and the tools for fully assessing operation and maintenance costs in all instances which rely on long-term groundwater monitoring and/or groundwater use restrictions. In addition, the Agency must have the ability to require an upfront commitment of funds from the PRPs not only for ongoing monitoring but also for contingencies that may arise if site characterization or containment approaches prove flawed.

Industrial Land Use Is Not Fixed in Time

On its face, the prospect of controlling land use would appear to be less complex and less difficult than a program which puts the federal bureaucrat in the position of controlling the future use of an unseen resource. The land surface, afterall, is in view. And it is static.

Or so it would seem. But land use controls can have their own complexities.

First, as my own brief and frustrating experience as a county planner showed me, the only certainty in land use planning may be the certainty of change.

With perhaps the exception of localities which have been devastated by natural disasters, the communities that we live in today reflect their past. Communities build upon what has gone on before, but they do not just grow bigger. Their patterns of growth change: Land that was open and unpopulated is chopped into scattered subdivisions, farmettes or industrial parks; suburban sprawl gives way to infill at some point; in some places, urban blight is gentrified; and elsewhere thriving business districts age or shrink. The factors that together effect these changes can be local, regional, national or global. Some change will happen by community choice and plan; other changes are dictated by the outcome of land use litigation, the contours of a new highway or the changing fortunes of a single community employer.

Zoning ordinances change, as do the zoning designations of parcels on community zoning maps. Even master plans, which purport to take a long-range view, change with surprising frequency in some communities. In the long run, land use is not static.

Change is inevitable -- even for land that many would consider locked into industrial use.

New York's SoHo district, for example, has changed its face substantially over the years. At one time the South Houston Industrial Area, as it was known, employed thousands of people in businesses associated with printing, chemicals, leather and paper products. For a time the then-industrial area was dubbed Hell's Hundred Acres.

The Torpedo Factory on Alexandria's waterfront today houses artists rather than munitions. Monterey's and John Steinbeck's Cannery Row is not a bustling fishing community but a tourist mecca. One of Chicago's first "new towns in town," Dearborn Park, displaced a variety of printing and photo businesses.[8]

Even areas that once seemed ill-suited for other uses can undergo significant change.

Critics of Superfund frequently point to railyards and railroad rights-of-way as areas where cleanup dollars may be wasted. But critics might also consider that as the country loses close to 3,000 miles of rail corridor each year, public demand for recreational facilities and cycling or pedestrian pathways turns a portion of those abandoned lines into well-travelled trails. Today there are 536 rail-trails spanning more than 6,000 miles in operation, and trail projects underway exceed 500.

Land Use Controls Must Look at Communities and Neighbors, Not Just Industrial Parcels

In our view, the nation's towns, cities, counties, parishes and townships have difficulty enough charting a course of change and preservation that fits the fabric of their respective communities, the needs of long-time residents, the demands of newcomers, the interests of non-residents and the aspirations of local youngsters.

They are not helped by the existence of a Superfund site or for that matter any other contaminated site. Nor are they helped by the case in which engineers, hydrogeologists, lawyers and outside business interests decide by fiat the future options or lack of options for a piece of property in that community.

By law, communities cannot single out individual parcels of land for special or different treatment in comparison with properties similarly situated. And by basic tenet of planning, any community would be ill-advised to plan the future of its community, parcel by parcel, rather than in total. Context is critical.

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[8] The changes in North Chicago that occurred in the period from the late 70s to the mid 80s were accompanied by relatively stable employment statistics. The changing composition of the workforce as that City was altered in less than a decade, however, tells a story about the land use changes that occurred. Over 7,000 jobs in the manufacturing sector were lost in those years.

Unfortunately, the future of local Superfund sites may be dictated to communities on a per parcel basis rather than made in partnership with them. Cases such as this would appear to be occurring today, as Superfund decision-makers choose soil remediation levels, capping technologies or other options that imply the need for long-term site restrictions.

Friends of the Earth believes, first, that a preference for institutional controls rather than a full consideration of remedial alternatives should be rejected. Our goal should be to restore all sites to a full-range of uses; Superfund should be about restoring options not cutting them off.

Where technology uniquely constrains available options, however, it may be that some form of land use restrictions will have to be contemplated. For these cases, Congress should mandate a process which assures, first, that the needs of neighbors are addressed, that contemplated restricted land uses are acceptable to the local community and consistent with its planning and zoning, and that continued industrial activities do not take place on sites which are uniquely vulnerable to continued contamination.

In no instance, would we see justification for a decision foreclosing future land use options without the participation and the consent of site neighbors and the local community. And in no instance, could we endorse a less-than full cleanup alternative on a site directly adjoining or in close proximity to homes, schools, hospitals, playgrounds or other sensitive land uses.

Further, if Congress opts to sanction -- in any fashion whatever -- the use of land use controls, we believe it will need to clarify in the statute the appropriate forms of deed restrictions and an unambiguous intention to assure that restrictions will be viewed by the courts as transferring with property. This is necessary because the validity of restrictions over time does not appear to be clear today. Congress must also consider and provide for long-term oversight of these restrictions; someone must be entrusted with enforcing these controls.

In sum, Mr. Chairman, I would concede that some of the proposals offered to Congress today appear, at first blush, like bargains worth grabbing. But some bargains, as we all know, are not good buys.

We believe that Congress had the right idea when it opted for permanent cleanups to the greatest extent possible. Experience has taught us how difficult attainment of that goal can be, but surely it doesn't tell us that we should steer a future Superfund course that abandons that goal altogether.

I thank you for the opportunity to testify. I look forward to answering your questions and working with your staff during your deliberations.

Table B-1. Possible Data Requirements for Estimation of Contaminant Release and Transport and Exposed Populations

Type of Analysis	Type of Site	Area of Concern	Area Subclass	Parameter
Contaminant release	Contaminated surface soil (includes spills and leaks)	Particulate release	Wind erosion	• Soil erodibility index[a] • Soil ridge roughness factor[a] • Field length along prevailing wind direction • Vegetative cover factor • Concentrations of contaminants[b] • Volume of contaminated region[b]
			Unpaved roads	• Silt content • Mean speed of vehicles traversing contaminated area[d] • Mean weight of vehicles traversing contaminated area[d] • Mean number of wheels of vehicles traversing contaminated area[d]
			Excavation and transfer of soil	• Silt content[c] • Mean wind speed[e] • Drop height • Material moisture content • Dumping device capacity
		Volatilization	Short-term release	• Vapor concentration of contaminants in soil pore spaces[f]
			Long-term release	• Depth from soil surface to bottom of contaminated region[b] • Area of contamination[b] • Depth of "dry" (uncontaminated) zone at sampling time[b] • Concentrations of contaminants in soil and in liquid phase[b] • Soil porosity[b,c] • Absolute temperature[b,e] • Time measured from sampling time
		Runoff to surface water		• Soil erodibility factor[d] • Slope - length factor • Vegetative cover factor[d] Erosion control practice factor[d] • Area of contamination • Soil bulk density[c] • Total areal concentrations of contaminants
		Release to ground water		• See Chapter 3.6 of Manual

(Continued)

Table B-1. (Continued)

Type of Analysis	Type of Site	Area of Concern	Area Subclass	Parameter
	Landfill	Volatilization	No internal gas generation	• Area of contamination • Soil porosity[c] • Effective depth of soil cover • Mole fractions of contaminants in waste • Absolute ambient temperature[e] • Absolute ambient pressure[e,h] • Soil bulk density[c,i] • Concentration of contaminants in soil[b] • Volume of contaminated region[b]
			With internal gas generation	• Vapor concentration of contaminants in soil pore spaces[f] • Area of contamination
		Release to ground water		- See Chapter 3.6 of Manual
	Lagoon	Volatilization		• Liquid-phase concentrations of contaminants • Area of contamination • Absolute ambient temperature[e] • Volume of contaminated region[b]
		Migration into ground water		- See Chapter 3.6 of Manual
Contaminant fate	Contaminated surface soil, landfill, lagoon	Atmospheric fate		• Distance from site to selected exposure point • Mean wind speed[e] • Relative annual frequency of wind flow towards point j[g] • Relative annual frequency of stability class for wind flow towards point x[e] • Stability classes (A = unstable, F = stable); according to Pasquill classification system[e] • Vegetative cover factor[d]

(Continued)

Table B-1. (Continued)

Type of Analysis	Type of Site	Area of Concern	Area Subclass	Parameter
		Surface water fate		• Combined effluent and stream flow data • Intermedia substance transfer rate[f] • Width of water body[j] • Stream velocity[j] • Stream depth[j] • Slope of stream channel[j]
		Ground water fate	Saturated zone	• Soil hydraulic conductivity[k] • Hydraulic gradient[l] • Effective soil porosity[k]
			Unsaturated zone	• Average percolation or recharge rate[m] • Volumetric water content of soil in unsaturated zone[f] • Hydraulic loading from manmade sources[f,n] • Precipitation rate[n,o] • Evapotranspiration rate[f,n] • Runoff rate[f,n] • Average depth of contaminated area[n] • Evaporation rate[o]
Exposed populations	All	General		• Location of population • Number of persons • Age/sex distribution
		Contaminated surface water		• Recreation patterns (fishing, hunting, swimming) • Commercial fisheries present • Drinking water intake locations and populations served
		Contaminated ground water		• Drinking water intake locations and populations served

[a] Some values can be obtained from existing literature.
[b] For calculation of long-term release (≥ 70 years).
[c] Can be obtained from Soil Conservation Service (SCS) "Soils 5 File" data base.
[d] Estimated indirectly from site survey information.
[e] Can be estimated based on existing meteorological station data.
[f] Can be calculated.
[g] Can be obtained from SCS office or from existing literature.
[h] Necessary only if diffusion coefficients for toxic components are not available from existing literature.
[i] Can be measured as an alternative to measuring soil porosity.
[j] Can be obtained from USGS data.
[k] Can be calculated or estimated from Table in Manual.
[l] Can be obtained from USGS or local university geology/hydrogeology departments.
[m] Can be calculated via equation in manual, or can be obtained from USGS, USDA, NOAA, or U.S. Forest Service.
[n] Needed to calculate average percolation/recharge rate when not measured at site.
[o] Available from local or National Weather Service.

Table B-2. Index to Variable Terms

Term Used	Definition	Units	Equation(s) in which term is used	Source
E	Potential annual wind erosion soil loss	(mass/area/time)	2-1	calculated
I'	Soil erodibility index	(dimensionless)	2-1	site data and literature
K'	Soil ridge roughness factor	(dimensionless)	2-1	site data and literature
C'	Climatic factor	(dimensionless)	2-1	literature
L'	Field length along the prevailing wind direction	(feet)	2-1	site data and literature
V	Vegetative cover factor	(dimensionless)	2-1	site data
E_{VT}	Emission factor for vehicular traffic	(kg/vehicle kilometer traveled; lb/vehicle mile traveled)	2-2	calculated
k	Particle size multiplier	(dimensionless)	2-2	see text
s	Silt content	(%)	2-2	site data, SCS Soils 5 File
S_p	Mean vehicle speed	(kph; mph)	2-2	site data
W	Mean vehicle weight	(Mg; tons)	2-2	site data
w	Mean number of wheels	(dimensionless)	2-2	site data
D_p	Number of days with at least 0.254 mm (0.01 in) of precipitation per year	(dimensionless)	2-2	Figure 2-3
E_i	Emission rate of toxic component i	(g/sec)	2-3; 2-8; 2-9; 2-11; 2-15	calculated
D_i	Diffusion coefficient of component i	(cm^2/sec)	2-3; 2-4; 2-5; 2-12	calculated
A	Contaminated area	(cm^2; areas; ha) (100 in^2)	2-3; 2-8; 2-9; 2-11; 2-15; 2-19; 2-21; 2-24; 2-25; 2-26; 2-30; 2-32; 2-33; 2-37	site data
C_{si}	Saturation vapor concentration of component i	(g/cm^3)	2-3; 2-7	calculated
P_t	Soil porosity	(dimensionless)	2-3; 2-6; 2-12; 3-17; 3-34; 3-35	site data; SCS Soils 5 File
d_{sc}	Effective depth of soil cover	(cm)	2-3	site data
M_i	Mole fraction of toxic component i in the waste	(g/g)	2-3	site data
T	Temperature	(K, C)	2-4; 2-7; 2-10; 2-13; 2-16; 2-17	site data
MW_i	Molecular weight of contaminant i	(g/mole)	2-4; 2-5; 2-7; 2-10; 2-17	literature
MW_a	Molecular weight of air	(g/mole)	2-4	see text
ΣV_1, ΣV_2	Molecular diffusion volumes of toxic contaminant (V_1) and air (V_2)		2-4	literature and calculated
P_a	Absolute pressure	atm	2-4	site data
D'	Known diffusion coefficient of a compound with molecular weight and molecular diffusion volume close to that of the unknown (D_i)		2-5	see text
MW'	Molecular weight of the selected compound corresponding to D'	(g/mole)	2-5	literature
β	Soil bulk density	(g/cm^3)	2-6; 2-25; 2-26; 2-27; 3-17	site data; SCS Soils 5 File

(Continued)

Table B-2. (Continued)

Term Used	Definition	Units	Equation(s) in which term is used	Source
ρ	Particle density	(g/cm^3)	2-6	see text
p	Vapor pressure of the chemical	(mm Hg)	2-7; 2-37	literature or estimated (see text)
R	Gas constant	(82.3 mm Hg-liter/k-mol; 8.2 x 10^{-5} atm-m^3/-mol-k)	2-7; 2-13; 2-16	see text
C_i^*	Vapor concentration of compound i	(g/cm^3)	2-8; 2-9	site data
V_y	Mean landfill gas velocity in the soil pore spaces	(cm/sec)	2-8	see text
k_G	Gas-phase mass transfer coefficient of chemical i	(cm/s)	2-9; 2-10; 2-16	calculated
MW_{H_2O}	Molecular weight of water	(g/mole)	2-10	see text
k_iG,H_2O	Gas phase mass transfer coefficient for water vapor at 25°C		2-10	calculated
C_s	The liquid-phase concentration of component i	(g/cm^3)	2-11; 2-14; 2-15; 2-19; 2-34	site data
C_B	Bulk contaminant concentration in soil	(g/cm^3)	2-11; 2-14; 2-19	site data
t	Time measured from sampling time	(seconds)	2-11	site data
d	Depth of dry zone at sampling time	(cm)	2-11; 2-14; 2-19	site data
D	Related to the amount of contaminant i that goes from liquid to gas phase, and then from gas phase to diffusion in air	(cm^2/sec)	2-11; 2-12; 2-14; 2-19	calculated
H_i'	Henry's Law constant in concentration form	(dimensionless)	2-12; 2-13	calculated
H_i	Henry's Law constant	(atm-m^3/mol)	2-13; 2-16	literature
h	Depth from soil surface to the bottom of the contaminated region	(cm)	2-14	site data
t_d	The time at which all contaminant has volatized from the soil	(sec)	2-14	calculated
K_i	Overall mass transfer coefficient	(cm/sec)	2-15; 2-16	calculated
k_{iL}	Liquid phase mass transfer coefficient	(cm/sec)	2-16; 2-17	calculated
MW_{O_2}	Molecular weight of oxygen	(g/mole)	2-17	see text
k_L, O_2	Liquid phase mass transfer coefficient for oxygen at 25°C		2-17	literature
E_{Ai}	Average release of contaminant i	(mass/time)	2-18; 2-19; 2-29	calculated
V_c	Volume of contaminated region	(cm^3)	2-18; 3-34; 3-35	site data
C_i	Concentration of contaminant i in soil	(g/cm^3, kg/ha, lb/acre)	2-18; 2-25; 2-26; A-3	site data
E	Total release rate of contaminant i obtained by summing all above-listed releases of the contaminant at the site	(g/sec)	2-18	calculated
$Y(S)_E$	Sediment yield in tons per event	(metric tons)	2-20; 2-27	calculated
a	Conversion constant		2-20; 2-21; 2-23; 2-24	see text
V_r	Volume of runoff	(acre-feet, m^3)	2-20; 2-21	calculated
q_p	Peak flow rate	(ft^3/sec, m^3/sec)	2-20; 2-24	calculated
K	The soil-erodibility factor. Obtained from the local Soil Conservation Service Office	(commonly expressed in tons per acre per R unit)	2-20; 2-30	site data, literature
L	The slope-length factor	(dimensionless)	2-20; 2-30	see Figures 2-4 through 2-6
S	The slope-steepness factor	(dimensionless)	2-20; 2-30	see Figures 2-4 through 2-6
C	The cover factor	(dimensionless)	2-20; 2-30	see text and Table 2-4

(Continued)

Table B-2. (Continued)

Term Used	Definition	Units	Equation(s) in which term is used	Source
P	The erosion control practice factor	(dimensionless)	2-20; 2-30	see text
Q_r	Depth of runoff	(in, cm)	2-21; 2-22; 2-24; 2-28	calculated
R_t	The total storm rainfall	(in, cm)	2-22; 2-24; 2-28	National Climatological Data Center, Asheville, NC; USDC (1961)
S_w	Water retention factor	(in, cm)	2-22; 2-23; 2-24	calculated
CN	The SCS Runoff Curve Number	(dimensionless)	2-23	Table 2-6
T_r	Storm duration	(hour)	2-24	National Climatological Data Center, Asheville, NC; USDC (1961)
S_s	Sorbed substance quantity	(kg, lb)	2-25; 2-27	calculated
D_s	Dissolved substance quantity	(kg, lb)	2-26; 2-28	calculated
Θ_c	Available water capacity of the top cm of soil	(dimensionless)	2-25; 2-26	calculated (see text)
K_d	Sorption partition coefficient	(cm^3/g)	2-25; 2-26; 3-17; 3-19	literature
PX_l	Sorbed substance loss per event	(kg, lb)	2-27	calculated
PQ_l	Dissolved substance loss per event	(kg, lb)	2-28	calculated
B	Dissolved or sorbed loss per storm event	(kg, lb)	2-29	calculated (see text)
N	Number of "average" storm events in 70 years	(dimensionless)	2-29	National Climatological Data Center, Asheville, NC; USDC (1961) (see text)
$Y(S)_A$	Annual soil loss in runoff	(tons)	2-30	calculated
R_f	Rainfall and runoff factor	(dimensionless)	2-30	
S_d	Sediment delivery ratio	(dimensionless)	2-30; 2-31	calculated
D_d	Overland distance between site and receiving waterbody	(Ft)	2-31	site data
L_c	Contaminant Loading rate	(mass/time)	2-32; 2-34; 2-37	calculated
C_o	Solubility of solid chemical	(mass/volume)	2-32	literature
Q_l	Volume loading rate	(volume/time)	2-33; 2-34	calculated
b	Soil specific exponential function	(dimensionless)	2-33; 3-13	Table 3-11
K_s	Soil hydraulic conductivity	(length/time)	2-33; 3-9;3-13	site data, Table 3-8; 3-9
i	Hydraulic gradient	(dimensionless)	2-33; 3-9	site data
K_c	Hydraulic conductivity of liquid contaminant in site soil	(length/time)	2-35; 3-16	calculated
K_w	Hydraulic conductivity of water in site soil (same as K_s)	(length/time)	2-35; 3-16	site data
D_c	Density of liquid contaminant	(mass/volume)	2-35	literature
D_w	Density of water	(mass/volume)	2-35	literature
u_c	Dynamic viscosity of liquid contaminant	[mass/(length × time)]	2-35	literature
u_w	Dynamic viscosity of water	[mass/(length × time)]	2-35	literature

(Continued)

Table B-2. (Continued)

Term Used	Definition	Units	Equation(s) in which term is used	Source
P_e	Permeation rate	[g-mil/(100 in^2 x day x cmHg)]	2-36; 2-37	calculated
Ap	Permeation constant for polymer	[g-mil/(100 in^2 x day x cmHg)]	2-36	Table 2-7
S_H	2nd permeation constant for polymer	(cc/cal)	2-36	Table 2-7
ϕ	Permachor value for polymer-permanent pair	(cal/cc)	2-36	Table 2-7; 2-9; 2-10
d_l	Thickness of liner	(mils)	2-37	site data
x	Distance from site to selected exposure point	(length)	3-1; 3-2; 3-3; 3-7; 3-8	site data
$\bar{C}(X)$	Atmospheric concentration of substance at distance X from the site	(mass/volume)	3-1; 3-3, A-1	calculated
Q	Release rate of substance from site to atmosphere	(mass/time)	3-1	calculated
σ_y	Atmospheric dispersion coefficient in the lateral (crosswind) direction	(length)	3-1; 3-3	Figure 3-5
σ_z	Atmospheric dispersion coefficient in the vertical direction	(length)	3-1	Figure 3-6
μ	Mean wind speed	(length/time)	3-1	site data
π	The value pi = 3.1416	(dimensionless)	3-1	------
$\bar{C}(X)$	Average atmospheric concentration of substance at point X over long term	(mass/volume)	3-2; A-1	calculated
W(X)	Relative annual frequency of wind flow	(dimensionless)	3-2	site data
$C_A(X)$	Atmospheric concentration at point X during stability Class A	(mass/volume)	3-2	calculated
f_A	Relative annual frequency of stability Class A for wind flow towards point X	(dimensionless)	3-2	site data
A,B,C, D,E,F	Stability classes (A = unstable, F = stable) according to Pasquill classification system	(dimensionless)	3-1; 3-2	site data
C(CL)	Predetermined critical atmospheric concentration level	(mass/volume)	3-3	air quality criteria
$Y_{(X)}$	Perpendicular distance from point X on plume centerline to the C(CL) isopleth boundary	(length)	3-3	calculated
$\bar{C}$	Concentration of substance in stream water	(mass/volume)	3-4; 3-5; A-2	calculated
C_e	Concentration of substance in effluent	(mass/volume)	3-4	contaminant release analysis
Q_e	Effluent flow rate	(volume/time)	3-4	contaminant release analysis
Q_t	Combined effluent and stream flow rate	(volume/time)	3-4; 3-5	site data
T_r	Intermedia substance transfer rate	(mass/time)	3-5	site data, calculated
MZ	Length of mixing zone downstream of effluent release to stream	(length)	3-6	calculated
W	Width of water body	(length)	3-6	site data
u	Stream velocity	(length/time)	3-6; 3-7; 3-8	site data
d_n	Stream depth	(length units)	3-6	site data

(Continued)

Table B-2. (Continued)

Term Used	Definition	Units	Equation(s) in which term is used	Source
a_i	Slope of stream bed	(dimensionless)	3-6	site data
g	Gravitational acceleration constant	(32 ft/sec^2)	3-6	------
W(X)	Water concentration of substance at downstream distance X	(mass/volume)	3-7	calculated
W(CL)	Predetermined critical water concentration level	(mass/volume)	3-8	water quality criteria
W(O)	Water concentration of substance immediately below point of introduction to stream	(mass/volume)	3-7; 3-8	calculated
K	Overall aquatic decay coefficient	(time^{-1})	3-7; 3-8	literature, estimated
e	Exponential function	------	2-36; 3-7	------
V_{pw}	Interstitial pore-water velocity or ground-water velocity	(length/time)	3-10; 3-12; 3-18	calculated
q	Average percolation or recharge rate	(depth/time)	2-32; 3-12; 3-13; 3-14	site data, calculated
v	Darcy velocity	(length/time)	3-9; 3-10; 3-26; 3-27; 3-29; 3-30	calculated
P_e	Soil Effective Porosity	(dimensionless)	3-10; 3-11; 3-28; 3-31	site data
Θ_s	Saturated Water Content soil (equal to P_t)	(dimensionless)	3-11; 3-13	site data, literature
$\Theta_{(-15)}$	Wilting Point Moisture Content	(dimensionless)	3-11	site data, literature
Θ	Volumetric water content of soil	(dimensionless)	3-12; 3-13	site data, calculated
HL	Hydraulic loading from manmade sources	(depth/time)	3-14	site data, calculated
Pr	Precipitation rate	(depth/time)	3-14	site data
ET	Evapotranspiration rate	(depth/time)	3-14; 3-15	site data,calculated
Q_r	Runoff rate	(depth/time)	3-14	site data,calculated
EVAP	Evaporation rate	(depth/time)	3-15	site data
C_{at}	Correction factor for converting pan evaporation rate to evapotranspiration rate for turf grass	(dimensionless)	3-15	Table 3-12
C_{veg}	Correction factor for converting turf grass evapotranspiration to that for other vegetative cover	(dimensionless)	3-15	Table 3-13, see text
R_d	Retardation factor	(dimensionless)	3-17; 3-18; 3-27; 3-30	calculated
v_d	Retarded velocity of hydrophobic	(length/time)	3-18	calculated
K_{oc}	Partition coefficient for organic carbon	(ml/g)	3-19; 3-20; 3-21; 3-22; 3-23; 3-24; 3-25	calculated
f_{oc}	Fraction of organic carbon in soil	(dimensionless)	3-19	site data, literature
K_{ow}	Octanol/water partition coefficient	(ml/g)	3-20; 3-21; 3-22; 3-23; 3-24; 3-25	literature
X_d	Nomograph factor	(dimensionless)	3-26; 3-29	calculated
T_d	Nomograph factor	(dimensionless)	3-27	calculated
O_d	Nomograph factor	(dimensionless)	3-28; 3-31	calculated

(Continued)

Table B-2. (Continued)

Term Used	Definition	Units	Equation(s) in which term is used	Source
D_X	Longitudinal Dispersion Coefficient	(length^2/time)	3-26; 3-27; 3-28; 3-29; 3-31	calculated
D_Y	Transverse Dispersion Coefficient	(length^2/time)	3-28; 3-31	calculated
m	Aquifer thickness	(length)	(Fig. 3-8)	site data
α_x	Longitudinal dispersivity	(length)	(Fig. 3-8)	literature
α_y	Transverse dispersivity	(length)	(Fig. 3-8)	literature
γ	Coefficient for decay	(dimensionless)	(Fig. 3-8)	literature
λ	Decay constant	(1/time)	(Fig. 3-8)	calculated
$T_{1/2}$	Half-life	(time)	(Fig. 3-8)	calculated
V_l	Volume of liquid chemical released	(length^3)	3-32	site data
C_l	Average concentration of chemical contaminant in released liquid	(mass/length^3)	3-32	site data
V_{gw}	Volume of contaminated ground water	(length^3)	3-32; 3-33; 3-34; 3-35	site data
C_{gw}	Average concentration of contaminant in ground water	(mass/length^3)	3-32; 3-33	site data
M_c	Mass of solid waste	(mg)	3-33	site data
C_c	Concentration Expressed as Mass Fraction	(dimensionless)	3-33	site data
IEX	Inhalation exposure	(mg/kg/day)	A-1	calculated
t_e	Duration of exposure event	(hours/event)	A-1; A-2	estimated
I	Average inhalation rate	(m^3/hr)	A-1	Table A-3
Bw	Average adult body weight	(70 kg)	A-1; A-2; A-3	Eq A-1
F	Frequency of exposure event	(number/lifetime)	A-1; A-2; A-3	estimated
DEX	Dermal exposure	(mg/kg/day)	A-2; A-3	calculated
AV	Skin surface area available	(cm^2)	A-2; A-3	estimated
PC	Dermal permeability constant for subject contaminant	(cm/hr)	A-2	Table A-4
DA	Dust adherence	(mg/cm^2)	A-3	See text
C	Contaminant concentration			

STATEMENT OF
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ACTING DEPUTY ASSISTANT ADMINISTRATOR
OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON SUPERFUND, RECYCLING AND SOLID WASTE MANAGEMENT
OF THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
U.S. SENATE

September 30, 1993

Good Morning. In my usual capacity, I am the Director of the Technology Innovation Office in the Office of Solid Waste and Emergency Response at EPA. I am accompanied by Mr. Stephen A. Lingle, Deputy Director of the Office of Environmental Engineering and Technology Demonstration at the EPA. Mr. Lingle's office is responsible for management of the Superfund Innovative Technology Evaluation (SITE) program. We are pleased to be here to discuss the development and implementation of innovative remediation technologies in the context of the Superfund program.

In order to give some context to the testimony and to more fully lay the groundwork for discussion, I have attached to this statement my testimony of September 15, 1992 before the House Committee on Public Works and Transportation. This statement describes in greater detail some of the activities and progress made by our office in furthering the use of innovative remediation technologies.

I would like to address four topic areas concerning the development, demonstration, and application of innovative technologies — SITE Program Progress, Barriers to Greater Field

Application, Issues in Increasing the Application of Innovative Technologies, and Initial Steps in Addressing Barriers.

SITE Program Goals and Achievements

The SARA Amendments of 1986 recognized the need for more innovative technologies in the Superfund program. This led to the SITE (Superfund Innovative Technology Evaluation) program. SITE conducts full-scale field evaluation of mostly innovative technologies developed mostly by private vendors. SITE develops credible cost effectiveness information so that decisionmakers can choose the technology with confidence in its performance.

The SITE program has been very successful. In a recent analysis, technology developers reported that the program has been instrumental in gaining access to the remediation market for successful SITE technology graduates. SITE technologies have been selected for over 400 cleanups (Superfund, RCRA corrective action, and other types, e.g. underground storage tanks). In addition, SITE developers have submitted over 1500 remediation proposals and conducted over 800 remedy selection treatability studies. Innovative technologies are now being selected in better than half of the cleanup decisions. While this is due to several factors (see attached testimony), SITE plays an important role in raising the consciousness of decisionmakers as to the potential benefits of innovative technologies and provides credible information to allow innovative technology decisions to be made with confidence. In a survey in Region V, 85% of the remediation decisions selecting innovative technologies specified those tested under SITE. Region

V experience in a limited sample indicates savings of about 70% when innovative technologies were selected over conventional technologies. While innovative technologies are not always applicable, the potential savings are in the hundreds of millions of dollars where they can be used. Several innovative technologies evaluated under the SITE program have now graduated from innovative to off-the-shelf status. Among these are soil vapor extraction (which is now widely used), thermal desorption, and innovative modifications to stabilization technologies.

Barriers to Greater Field Applications

While the principal mission of the SITE program is to develop and transfer information about technologies, the Technology Innovation Office (established in 1990) serves as a partner with the SITE program and as a champion for the application of innovative remediation technologies within EPA and the engineering community that supports the Superfund program.

The Technology Innovation Office (TIO) has identified the "customers" who must make decisions about such technologies and formally sought their input as to what are the barriers to the use of such technologies. Those customers are: EPA and State project managers, consulting engineers, potentially responsible parties (PRPs), and owners/operators of operating industrial facilities. The barriers to such application can be broadly grouped into information, regulatory, and institutional categories. My testimony of September 15 (attached) describes in some detail our efforts to develop responses to such barriers. The following

summarize some of the more frequently cited barriers to such technology use:

- Full-scale performance and cost data are for the most part lacking for innovative treatment technologies. Large financial liabilities and potential damage to an individual's or a company's reputation are strong disincentives to risk using technology that has not been proven. Although a significant number of innovative treatment technologies have been selected in Superfund Records of Decisions (RODs) (approximately 270 through FY 1992), most of these are not completed projects, and, therefore, do not have final performance and cost data. Development of full-scale performance and cost information is, of course, the purpose of the SITE program, and companies who have "graduated" from the SITE program report substantial access to the market as we indicated.

- While EPA has organized its available information, access to public performance and cost data has not been straightforward or centralized. EPA has attempted to improve access through the Vendor Information System on Innovative Treatment Technologies (VISITT), the Alternative Treatment Technology Information Center (ATTIC), and a joint EPA Air Force Screening Guide for options development at Air Force sites. Still, there is a need to standardize the collection of cost and performance data.

- Professional development has not kept pace with developments in innovative treatment technologies. Information on new technologies should be used to update engineering courses in universities; deliver short, focused seminars for hazardous waste professionals; and, produce manuals of practice to guide users of innovative technologies toward greater consistency and expectations in application. TIO has several projects underway to address this need, including development with the University of Connecticut of a masters degree-level training course on Hazardous Waste Remediation that takes into account innovative treatment technologies. The course material is presently being formatted for distribution to colleges and universities.

- Under the Resource Conservation and Recovery Act (RCRA), permits are required for all hazardous waste treatment, including testing associated with developing innovative treatment technologies. While special Research, Development and Demonstration (RD&D) permits are available for innovative technologies, companies

developing new technologies have found that obtaining these permits still requires substantial time and data. These requirements may be especially difficult for small entrepreneurs and firms which are not well capitalized. EPA has several regulatory efforts underway to ease the increased application of innovative technologies.

- Fear of expending large sums on a technology that may fail is a very important fifth inhibiting factor that slows down the adoption and subsequent commercialization of innovative treatment technologies. Technology application errors can cost a responsible party from tens of thousands of dollars for treatability studies to millions of dollars for full-scale remedies which fail to achieve cleanup standards. Fear of lawsuits compounds this problem further.

Despite these barriers, considerable progress has been made in implementing innovative treatment technologies in the Superfund program. In each of the last four years, over seventy percent of RODs selected some form of treatment as a remedy or part of a remedy. Furthermore, approximately one-third of source control Records of Decision (RODs) included at least one innovative technology. In the early years of the program, containment, incineration, and solidification were most frequently selected; however, in 1991, for the first time, the number of innovative technologies selected surpassed the number of established technologies. Approximately 40% of the innovative technologies selected are soil vapor extraction; however, bioremediation, low-temperature thermal desorption, soil washing, soil flushing, chemical treatment, and others are also moving toward commercialization.

Although we have made progress in choosing innovative technologies for source control, we have completed remediation on relatively few projects. However, many innovative technologies are

being installed or are operational, and we are looking forward to collecting information and data on our experience.

We have not made the same progress with innovative ground water remediation technologies, however. Most of these technologies consist of pumping water to the surface, where it is treated by conventional methods. Although nearly 79% of Superfund sites with RODs require ground water remediation, in situ remedies make up less than 2% of selected technologies. The lack of available in situ ground water remedies is hampering ground water cleanup efforts.

Issues in Increasing Application of Innovative Technology

The Superfund statute and some associated EPA policies were not fundamentally structured with technology development in mind. Integrating technology development objectives within this framework requires careful balancing against other goals that have been articulated in the statute. Several factors inhibit the selection and use of innovative technologies, and EPA's control over these different factors varies considerably.

First, some of the legislated deadlines which are included in the 1986 Superfund Amendments have the unintended effect of working against the interests of innovation. Section 116 imposes quotas for the commencement of RI/FS and remedial actions. Although a great deal of progress has been made as a result of these deadlines, it has resulted in a situation where the relative certainty of more established technologies results in an advantage

over innovative approaches which may require more time to complete treatability studies prior to implementation.

Treatability studies are necessary to develop new technologies and to assess their applicability to a specific waste. Subtitle C of the Resource Conservation and Recovery Act (RCRA) imposes permitting and manifesting requirements for facilities that treat hazardous waste. EPA has issued some regulatory provisions intended to provide relief, such as RD&D permit regulations and the 1000 kg Treatability Exclusion. However, States vary in the extent to which they have adopted these provisions. This has resulted in a patchwork set of requirements which impede a developer's ability to test a new process and to assess the treatability of a specific waste from a Superfund site.

The Agency's goals for cost recovery of trust fund money obligated at specific sites tends to inhibit work that could be interpreted as research rather than response cost. For example, it is unlikely that we would fund several demonstration projects at a particular site to compare the performance of different technologies.

The risk of failure is often mentioned by PRPs as the reason for avoiding new processes. Nobody wants to pay for a remediation twice. To minimize risk, the Agency stresses the need for treatability studies which are conducted early in the planning process. However, treatability studies do not remove all uncertainty, and some technologies, such as in situ remedies, may be difficult to adequately test at a small scale.

For certain types of technologies, current practice can provide disincentives for new process development. For example, conventional pump and treatment of groundwater is often accepted as a measure to contain the spread of contamination until permanent ground water remedies are developed. However, this practice creates its own inertia and can result in a complacency with the status quo, while eliminating the urgency for investment in new technology development.

As another example, the Superfund remedial program is primarily responsible for the selection of most new technologies. The removal program also has potential for greater use of innovative technologies, but is constrained by the one-year time limit for fund-financed removals. One year is often inadequate for treatability testing; shake down of new equipment; and biological and in situ processes. This time limit also inhibits removal sites from participating in the SITE program.

Under the SITE program authorization, EPA is precluded from financing the developer's cost in conducting a SITE demonstration. As a result, some promising technologies are not demonstrated.

Finally, as a general observation, the existing process does not always fully recognize the potential long-term benefits from the development of new technologies and, consequently, provides few special incentives for their use. We are looking for opportunities to provide incentives where possible. Recently, for example, EPA's new indemnification guidelines for response action contractors recognized the special status of innovative technologies.

Initial Steps in Addressing Barriers

Despite the impediments to the use of new technologies, it is important to remember the progress the Agency has made in selecting innovative processes. Still, there are steps which could improve the environment for new technology use.

First, as a context, it is important to note that the Agency is altering its historical role and working closer with the private sector as a partner with shared objectives. Conventionally, we have been viewed primarily as a regulator, permitter, and rule writer. These functions have kept us at arms length from industry, which tends to view the Agency with a negative bias. We have been working to build new relationships with the private sector which are based on other EPA roles including technology broker, researcher, and grant maker. Our cooperative efforts are expected to result in better directed research and more joint demonstration projects at Federal facilities.

We have started a dialogue with American companies who want to collaborate to share the risks of technology development with EPA and other Federal agencies. We are creating a Remediation Technologies Development Forum to work collaboratively with companies, public interest groups, States, and universities as well as DOE and DOD on defining and then jointly funding mutual priorities for cleanup technologies. Action teams have been formed under the forum for several key technology areas, including the critical in-situ ground water treatment area, with the goal of

sharing information, identifying issues, and establishing consortia for technology development and transfer.

We recently published a market survey to provide innovative technology developers and investors with information on the future demand for remediation services. This information was compiled to assist the efficiency of new technology development by helping to direct research and commercialization efforts toward the nation's hazardous waste problems. The report addresses site characteristics, marked size, and other demand factors of the major waste site cleanup programs in the U.S.

Our experience in developing remediation technologies proved to be very useful in establishing the Innovative Technology Council (ITC). This is an internal agency-wide advisory and advocacy group dedicated to furthering the development and use of innovative environmental technologies. It is composed of senior level advocates from each of the Agency program offices. The Council was created to foster cooperation and partnership between EPA, private developers and vendors, and other government agencies to advocate technology development and acceptance. The ITC was created out of a notion that EPA needs to assume a broader role as an advocate and partner with the private sector and other government agencies to pursue new solutions to environmental problems. The ITC fulfills its mission by coordinating the Agency's technology advocacy goals and aggressively seeking opportunities to leverage private and Federal investments.

From a policy and regulatory perspective, the Agency has begun providing incentives and removing some barriers to the broader use of new technologies. A program directive issued in June 1991 provides several initiatives to further the use of innovative technologies, but perhaps more importantly, it seeks to create an environment where responsible risk-taking is encouraged. As mentioned earlier, EPA has proposed a rule on July 7, 1993, to increase the current RCRA treatability exemption limit to at least 10,000 kg for contaminated soil and debris, and EPA is soliciting specific comment. In addition to facilitating development of innovative approaches, EPA expects that increasing the quantity limit will remove obstacles to the performance of comprehensive treatability tests, thereby increasing willingness to consider innovative approaches and increasing the likelihood that the technology will perform as expected when full-scale remedial efforts commence. Once adopted by delegated states under RCRA, this rule will make it easier to evaluate innovative technologies and help remove some of the uncertainty in remedy selection and bid formulation. In addition, as previously mentioned, we have developed indemnification guidance which address special needs for innovative technologies.

A fundamental tension exists between having PRPs pay for cleanups and conducting a program focused on developing new technology. For example, the cost recovery objective for sites where a PRP may exist inhibits sponsoring "treat offs" where we might competitively fund demonstrations by the most promising

technologies, and field tests which could serve as a screening step prior to award of the full-scale clean-up contract.

We often emphasize the importance of treatability studies and field demonstration projects. There is an important link between the ease of permitted off-site treatability studies and technology development. These efforts are currently constrained by permitting requirements. Rulemaking currently underway and a higher priority for permitting innovative technologies will partially address this issue. The interests of expanded technology testing could also be served by setting aside some resources for this purpose which could be used in a number of ways to stimulate new technology development. Few opportunities exist for the Agency to sponsor demonstration projects because technology development does not have the same high priority as other objectives of the statute.

Partnerships for Technology Development

We would like to conclude our statement with a brief discussion of a pilot effort which we think holds much promise for remediation technology development. It is our Public Private Partnership project at McClellan Air Force Base, Sacramento, California.

The purpose of the McClellan AFB Public-Private Partnership project is to measure performance and cost of innovative technologies as they operate in a real-world cleanup situation. Of equal importance is communicating results of applications effectively to other Air Force bases, private party sites, and EPA and State regulators. The partnership at McClellan is composed of

the California EPA, the Air Force, EPA's Region IX, Technology Innovation Office, Risk Reduction Engineering Laboratory, and Office of Federal Facilities Enforcement, and representatives from seven companies — Monsanto, Dow, DuPont, Xerox, AT&T, Beazer, Inc., and Southern California Edison. The facilitator for the project is Clean Sites, Inc., a non-profit group in Alexandria, VA under contract to EPA.

The process by which new technologies are recommended by EPA and accepted by PRPs is of paramount concern to us. Feedback we received from consulting engineers, EPA project managers, PRPs, and others that have a role in evaluating remedies at sites indicated that sharing risk would be a critical incentive to encourage greater use of new technologies. PRPs hesitate to assume the cost and potential liability of a failed test at their site, and such hesitation slows down commercialization. Because of the magnitude of the Federal facility cleanup and compliance challenge and the Administration's commitment to catalyze the development of technologies for environmental needs, Federal facilities offer unique opportunities for the development and application of innovative technologies for site cleanup. The use of Federal facilities as test locations for new technologies can be one of the government's contributions to promoting new environmental technologies. McClellan AFB is the first facility to accept this challenge. As a result of their participation, several innovative treatment technologies for soils and ground water will move to full-scale application in 1993/1994. Based on the degree of

success of the treatability applications, other Air Force bases, because they have similar contamination, may be able to use technologies identified in the McClellan project.

The private component of the partnership at McClellan consists of seven companies that have technology interests in common with McClellan, and will be involved in the evaluation of the innovative technologies selected at the base. The Air Force will benefit from the collective technical experience provided by these firms, and the firms in turn benefit from valuable data development at low risk to corporate cleanup resources. These companies can transfer this technology experience, similar to the Air Force, to other sites at which they are PRPs, because of the full-scale performance and cost information developed at McClellan.

Community involvement is also critical to this project's success. Through McClellan's existing efforts, community representatives have the opportunity to review and comment on cleanup plans. Acceptance of innovative treatment technologies by the local citizens at any site must be achieved for full commercialization.

Finally, the State Agency and EPA regional managers are key partners in this process. They ultimately make remedy decisions, and enforce the strict schedules that responsible parties commit to. They are also critical to disseminating information on final results from the project to their counterparts in other States and Regions, a central objective of the project. We believe the McClellan project to be a promising model for future technology

development with private parties, and we are now striving to arrange additional demonstrations at other Federal facilities.

In closing, we appreciate the opportunity to discuss the development and implementation of innovative treatment technologies in Superfund, and would be happy to respond to your questions.

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TESTIMONY PRESENTED TO THE SUBCOMMITTEE ON SUPERFUND, RECYCLING, AND SOLID WASTE MANAGEMENT OF THE UNITED STATES SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE

BY HARRY J. MOSCATELLO, PRESIDENT

ACCUTECH REMEDIAL SYSTEMS, INC

SEPTEMBER 30, 1993

Summary

The removal of Dense Non-Aqueous Phase Liquids (DNAPLs) from low permeable geologic formations such as silt, clay, and fractured bedrock has challenged remedial efforts undertaken in the Superfund program. Large areas of the United States are underlaid by low permeable geologic formations. These areas coincide with areas that have extensive industrial development. For example, industrialized areas around the Great Lakes, Northern New Jersey, and the San Francisco Bay area are characterized by near surface low permeable deposits. Discharges of chlorinated solvents in these historically industrialized areas have resulted in large volumes of hazardous substances trapped in shale or clay.

The standard approach of excavation with off-site disposal is expensive and politically unacceptable. Conventional in-situ techniques such as soil vapor extraction have been ineffective in situations with low permeability formations. What is needed is an in-situ technique that can extract chlorinated solvents from low permeable material.

This was recognized in 1988 when the Hazardous Substance Management Research

Center (HSMRC) located at the New Jersey Institute of Technology (NJIT) developed a process known as Pneumatic Fracturing to address this common and stubborn problem.

Accutech Remedial Systems, Inc. recognizing the potential for Pneumatic Fracturing techniques to over come these obstacles proposed to the EPA SITE Demonstration Program the application of pneumatic fracturing for the cleanup of a site we were handling under New Jersey's ECRA program. EPA, recognizing the wide applicability of the technology, agreed to include it in the SITE Program. The technology was demonstrated in 1992 at a site in New Jersey.

The Pneumatic Fracturing Extraction process consists of the controlled injection of pressurized air into an isolated subsurface zone at a rate that exceeds the natural ability of the formation to absorb air flow. The result is a fractured zone extending outward from a point of injection. The fractures increase formation permeability and expose more surface area to in-situ remediation.

Our field demonstration under the SITE Program proved that extraction air flow rates were increased as much as 18,000% over pre-fracture flow rates and TCE mass removal rates were increased as much as 2,400% versus pre-fracture rates. The process also increased the vacuum radius of influence for the extraction well by nearly three fold.

This means that Pneumatic Fracturing combined with soil vapor extraction as it was on this site can dramatically improve the performance of remedial systems. This will

decrease the time and cost of removing hazardous substances from the environment. Pneumatic fracturing has also been applied with bioremediation with similar success.

The EPA Site Program provided a rigorous scientific evaluation of the technology. The Site Program Technology Profile, which will be released shortly, concluded that "Pneumatic Fracturing Extraction provides for a cost effective accelerated remedial approach to low permeability formations contaminated with volatile organic compounds and semi-volatile organic compounds".

The positive publicity we received from our participation in the SITE Program has undoubtedly assisted in bringing the advantages of Pneumatic Fracturing to the attention of remedial system consumers. The rigorous scrutiny of the SITE Program is an essential ingredient in our efforts to commercialize this technology.

Despite the positive reports received from the site demonstration there remains considerable resistance to the use of Innovative Technologies for Site Remediation. This consumer resistance to Innovative Technology may be due to a number of factors:

1) The Site Program assesses but does not approve, endorse or recommend technologies. Therefore the consumer is required to draw his own conclusions from the wealth of scientific data put forth in the SITE Program evaluation reports.
2) Successful experience at a single site does not provide a sufficient body of data to convince a responsible party that the technology is appropriate to his site.

The technology developer must meet the challenge of persuading a remediation consumer that an Innovative approach is in his interest. Remediation consumers for the most part would opt for a passive solution. Avoiding the cost of active remediation is preferred. Perceived risk in utilizing an innovative technology is a significant factor.

Many of the innovative technology developers in the SITE Program are small entrepreneurial firms that have devoted all of their resources towards the research and development necessary to bring their invention successfully to the field. These firms often lack the sophisticated and expensive marketing apparatus to reach the ultimate consumers, and the working capital to survive the long period from successful site demonstration to full commercialization of their inventions.

Suggestions For Improving the Commercialization of Innovative Technologies Innovative technology research and development occurs most frequently through entrepreneurial businesses. Those with promising inventions are given assistance in the form of objective evaluation of field tests by the EPA through its SITE Program. This program offers a very important form of partnership between the federal government and entrepreneurial technology developers.

There is a major missing link in the chain of events that leading to the commercialization of these technologies and their widespread utilization in remediating hazardous sites throughout our nation. Responsible parties still view the use of innovative technologies emerging from the SITE Program (even those with successful evaluation) as risky. The

track record takes years to develop and successful implementation at a single site is not enough to convince consumers that they should take the risk in utilizing new technologies.

We offer potential consumers a pilot test approach, which is common in the industry. We price our pilot test proposals with a cost sharing philosophy in mind. Our goal is to cover our expenses in performing the pilot test so that we may begin building a record of achievement for our technology. Nonetheless, an investment of $30,000 to $50,000 is required to perform an adequate pilot test.

The irony is that for pneumatic fracturing the evidence is clear that application of the technology to appropriate sites would significantly reduce the time and cost of remediation.

Therefore, it is suggested that the Committee consider providing a financial incentive to remedial decision makers to encourage the use of successfully demonstrated innovative technologies in their clean up plans. For example, if the Federal Government agreed to share the cost of performing a pilot test of a successfully demonstrated technology such as pneumatic fracturing, it might make an investment of $15,000.00 to $25,000.00 for a site where the ultimate savings will approach millions. This investment is returned to the Government not only in substantially reduced remediation costs under Superfund, but also by promoting the job creating potential of a new and exciting industry.

Each time we remediate a site we employ engineers and technicians. We order supplies and fabricate equipment supplied by local businesses. The remediation technology development industry is undoubtedly a potential growth industry for our nation. I can think of no better way for our Federal Government to invest in job creation than through this industry, which not only fulfills the promise of creating technology oriented jobs but also discovers new ways of cleaning our environment.

A full technical discussion of pneumatic fracturing extraction follows.

[Note: The attachment to this statement has been retained in committee files.]

STATEMENT OF

DR. DEBORAH A. HANKINS
MANAGER, REMEDIAL PROJECTS

GENERAL ELECTRIC COMPANY

BEFORE THE
U.S. SENATE COMMITTEE ON ENVIRONMENT
AND PUBLIC WORKS
SUBCOMMITTEE ON SUPERFUND, RECYCLING, AND
SOLID WASTE MANAGEMENT

SEPTEMBER 30, 1993

The General Electric Company (GE) welcomes the opportunity to testify before this Subcommittee on the use of innovative technologies for site cleanup and how this issue relates to the need for reform of the Superfund remedy selection process.

GE is a major user of environmental technology as well as a major performer of environmental research and development. GE's businesses range from financial services to chemical processing, from the manufacture of light bulbs to the manufacture of jet engines. The company encounters a correspondingly wide range of environmental challenges, including Superfund, RCRA corrective action, and other Federal and State remediation programs. GE's remedial expenditures

over the last three years have ranged from $100-$125 million per year, and it is expected that the company will spend $140-$170 million per year over the next two years.

The Superfund program overall is a very large and expensive effort. A study conducted by the University of Tennessee[1/] estimates that the Superfund program will cost at least $150 billion over the next 30 years. Upper bounds on this estimate could even double that amount. Furthermore, the study has estimated that remediation expenditures in all major remediation programs[2/] could, quite plausibly rise to over $1 trillion over the next 30 years.

There are two issues that add to the concern regarding future costs of remediation in general, and remediation under the Superfund program in particular:

1/ M. Russell, E.W. Colglazier, M.R. English, Hazardous Waste Remediation: The Task Ahead, Waste Management Research and Education Institute, The University of Tennessee, Knoxville, December 1991.

2/ Superfund, RCRA corrective action, Department of Energy, Department of Defense, Underground Storage Tanks, and State and private party programs.

- First, most of the actual cleanup or remediation has yet to be performed. There are currently over 1,250 sites on the National Priority List (NPL), but less than 200 have been cleaned up to date. Further, it is expected that EPA will increase the number of NPL sites to over 3,000 in the next 30 years.

- Second, many of the sites are still in the early phases of the process and actuarial data show that the largest remediation costs are incurred during the later stages of the process; i.e., the remedial action phase. For example, over two-thirds of sites in which GE is involved are still in the investigatory phase of the process.

Given the significant expenditures that lie ahead, it is not surprising that many of the Superfund stakeholders are investing research and development resources to accelerate the implementation of innovative remediation technologies. The goal of these efforts is to develop a broader range of technology alternatives that will result in more cost-effective and reliable remedies. GE has invested over $30 million in the

last three years in remedial technology development, excluding the funds that has been expended specifically in bioremediation research. GE has expended approximately $20 million over the same time period for bioremediation research, primarily focused on PCBs.

GE is committed to finding better technologies to address the technical challenges encountered at remedial sites and believes that new technologies have the potential to significantly improve the Superfund process by facilitating the development of less costly and more reliable remedies, which in turn ensures the most effective cleanups at a greater number of sites.

Recommendations

Promoting the development of innovative technologies will help achieve Superfund's fundamental goal of expeditiously abating significant risks to human health and the environment through cost-effective methods based on accurate risk analysis. To promote the development of innovative technologies, GE recommends eliminating certain technical, regulatory, and cost barriers in the current Superfund program, establishing appropriate incentives, and creating a system in which the risks of using

such technologies that may not live up to expectations is shared. Specifically, drawing on GE's research and field experiences with innovative technologies, we have developed the following recommendations to improve the likelihood that these technologies will be successfully demonstrated at Superfund sites.

- Provide that use of innovative technologies be at the option of the PRP.

- During the reauthorization of Superfund in 1986, Congress added provisions to CERCLA addressing remedy selection and cleanup standards. Congress also addressed innovative technologies. In CERCLA § 121(b)(1), Congress required use of "alternative treatment technologies ... to the maximum extent practicable". In addition, in in CERCLA § 121(b)(2), Congress authorized selection of an "alternative remedial action .... whether or not such action has been achieved in practice at any other facility or site that has similar characteristics." These provisions have been read as creating a preference for innovative technologies and encouraging their use. These provisions, however, also require that remedies utilizing

alternative treatment technologies be protective, cost-effective, and permanent to the maximum extent practicable, just as with proven technologies. Furthermore, EPA holds PRPs fully liable under this provision for the failure of any innovative technology, and requires PRPs to assume the risks of failure of an innovative technology up-front and to remain liable to implement another, more proven technology, if an innovative approach is unsuccessful. Section 121(b) should be amended to provide for credits against liability to encourage use of innovative technology, *i.e.*, costs of innovative technology implementation should be credited against any cost of re-doing or supplementing a remedy with a more established technology, if the innovative technology is not successful. The Fund or non-participating parties could fund the difference.

- Legislatively mandate that settlements with PRPs seeking to implement an innovative technology include recognition of the government's interest in encouraging use of innovative technologies.

- Provide corresponding incentives written into the settlement document, such as the "credit" identified above, and provide an

expansion of the definition of *force majeure* to include situations in which innovative technologies do not work and a bar on stipulated penalties for delays arising from attempts to implement an innovative technology.

- Relax schedules where necessary to provide flexibility in utilizing a technology, recognizing that any new "product" inevitably has some unanticipated problems that require fine-tuning and adjustment in putting it into practice.

- Develop regulations which require the application of cleanup standards based on realistic risk assessments and the current actual or currently planned use of the site.

- Incorporate administrative incentives for the EPA regional offices to encourage the use of innovative technologies.

- Develop consistent regulations which minimize overlapping requirements of various statutes. For example, the development of technology for treatment of mixed radioactive and hazardous waste

is complicated by the contradictory requirements imposed for radioactive and hazardous wastes. Similar inconsistencies exist for mixed hazardous and PCB wastes which are regulated by RCRA regulations and TSCA regulations, respectively. A market niche is currently developing to separate these waste streams. It would be much more cost-effective, however, to change the regulations to address these waste streams in total as opposed to treating two separate streams.

- Require EPA regional offices to implement the goals set by headquarters and provide them with the flexibility to provide regulatory exceptions (*e.g.*, waive administrative requirements which are unnecessary for health and safety) in order to allow technology demonstrations.

- In S.984, the National Environmental Technologies Act, the Committee has taken a positive step toward promoting the development of innovative remediation technologies. Especially positive is the Environmental Innovation Research (EIR) Program of Title III with its requirement that Federal agencies with remediation

budgets in excess of $50 million annually must set aside 1.25 percent of remediation-related funds for development and commercialization of new technologies. If expenditure of these funds are coordinated among the agencies and if private sector participants in the National Environmental Technology Advisory Council created under Title IV are given meaningful input into the process for selecting projects for development, the EIR Program could work. Our view, however, is that S.984 represents only a good start on a part of the problem. It does not address the more important part of the problem that results from regulatory impediments to development and adoption of new technologies. This larger problem unaddressed in S.984 must be addressed in Superfund reauthorization if we are to seriously promote new remediation technologies.

Obstacles to the Development and Use of Innovative Technologies

Research dollars spent on innovative technologies are a good investment if such technologies can be applied effectively at Superfund sites and are less costly than proven technologies. Unfortunately, the current regulatory

programs create technical, regulatory, and cost obstacles which hinder the use of new technologies for site cleanup.

- **Technical Obstacles**

Development of an innovative technology is an expensive and time consuming process. Innovative technologies typically progress through the stages of conceptual design, laboratory testing, pilot scale testing, and eventually full scale field testing at a selected site. Application at a field site can reveal problems not evident during laboratory or pilot scale testing. Furthermore, many physical, chemical and biological processes are scale dependent, *i.e.*, a potential flaw in the technology may be unmeasurable or insignificant on a small scale but become significant when the process is extended to a larger scale.

Real site conditions also are more irregular and complex than laboratory settings. For most soil and groundwater cleanup technologies, irregularities in site conditions are a major obstacle to an effective cleanup. With new technologies, it may be difficult to predict all the effects of these irregularities and it would be prohibitively expensive to test all possible scenarios through laboratory pilot studies. Consequently, site treatability studies should be planned with enough flexibility in the

schedule for the remedial action program to accommodate permit application delays.

The goal in technology development is to provide a process that meets cleanup standards and has the broadest possible application, recognizing the high site-to-site variability of parameters that affect remediation. In practice, it has been found in demonstration projects that the extremely stringent cleanup standards and the interplay between the cleanup standards and site parameters limit the effectiveness of some remediation technologies. When these technologies are taken to the field and fine-tuned to address site variabilities, inappropriately low cleanup targets -- which often are below the level needed to assure protection of human health (single digit parts per million in soil or fractions of parts per billion in water) -- may be exceeded by small amounts. One possible solution in this area is to set site-specific cleanup levels using realistic risk assessments. This would provide additional flexibility to the technology developer to balance all the competing process goals.

An additional problem in the technical area that inhibits the development and acceptance of innovative remedial technology is the lack of

coordination between the government and private sector research groups. A recent example is EPA's lack of attention to groundwater research in the area of Dense Non-Aqueous Phase Liquids (DNAPLs). While it appears that the coordination is improving, more should be done.[3/] Indeed, we believe that EPA needs to be required to allow for significant industry involvement in cooperative federal-industry programs with the goal of defining and implementing more cost-effective remedial technologies.

- **Regulatory Barriers**

Greater attention should be focused on removing the regulatory barriers to the use of innovative technology. These barriers are not in the performance of research, development, or invention, but are in the statutory framework, the regulations developed thereunder, and site-specific clean-up levels requirements (which are also flawed due to problems with the statute).[4/] The barriers contribute significantly to the reluctance on the part of users and suppliers of environmental technology to take advantage of the most innovative methods.

3/ Consortium programs, such as the Remedial Technology Development Forum (RTDF) will help to bring industry, academia and regulatory research groups closer together to better understand the problems and work more cooperatively to jointly develop solutions.

4/ *See*, Statement of Atlantic Richfield Company, GE, Monsanto Company and WMX Technologies regarding Superfund remedy selection presented to this Subcommittee on September 9, 1993.

One of the primary regulatory barriers is the "moving target" problem. Instead of setting remedial standards for a site based on reasonable scientific standards to reduce risk to human health and the environment to the levels specified in the National Contingency Plan, EPA establishes standards for sites using innovative technologies based on the capability of measuring instruments. We have seen this, for example, in standards on such substances as mercury and PCBs. Even if these targets are met, it is possible that other more stringent ones might follow, regardless of the fact that the standards for protection of health and the environment are met with the less stringent levels. This uncertainty results in a reluctance on the part of technology developers and their financial backers to invest in technology that meets today's goals, but may not be capable of achieving tomorrow's more stringent standards.

In addition, regulatory requirements sometimes constrain R&D efforts. We have found this to be especially true in the PCB area, where the regulations on minute quantities used in R&D are sometimes as severe as those on the actual disposal of large quantities of the waste itself. R&D laboratories are treated as if they were toxic waste disposal facilities. Indeed, the permit requirements associated with the performance of PCB

research actually hinder the development of innovative remediation technologies by making it much more difficult to work with actual environmental samples. Often these requirements to handle small quantities of contaminated media (*e.g.*, soil) are more stringent than the OSHA requirements for a worker handling pure product.

- **Cost Problems**

Implementation of innovative technology by its nature may require methods, processes, and procedures that are not standard and may require materials, specialty contractors, and/or equipment which are more expensive to procure or fabricate than those for mature technologies with a history of utilization. Proven technologies generally have standardized methods, materials, and contractors that are competitive, efficient, and cost-effective.

The implementation of a remedial technology at hazardous waste sites typically involves regulatory approval, permit waivers, and community acceptance. This process is very labor-intensive and itself can be very costly. This administrative process may be significantly expanded by the use of the innovative technologies because there are not sufficient data

available to document the effectiveness and safety of the new technology. Additional costs may also result from potential liability incurred by a remediation firm because the cleanup operations are not considered standard practice and outcomes are less predictable.

As the technology is implemented at more sites, one can expect the reliability to increase and the costs to decrease (if the technology is effective). Currently, the low reliability and high cost of innovative technologies will usually prevent their selection during typical engineering cost-benefit analysis. However, the technical problems can be resolved by a joint engineering and regulatory effort in providing demonstrations of the technologies to gather data to overcome the reliability concerns.

GE Experience With Innovative Technology Applications

GE has had mixed experience with the application of innovative technologies at some of its NPL sites. Impediments encountered have been both technological and regulatory agency related. The example below involves a Spokane service shop Superfund site.

In situ vitrification (ISV), is a thermal treatment process for destroying organic materials, such as polychlorinated biphenyl's (PCBs), and immobilizing others, such as metals. The process, developed by Battelle Pacific-Northwest Laboratories for the Department of Energy (DOE) at its Hanford reservation in southeast Washington, was created to manage radioactive wastes at DOE sites by encapsulating radionuclides in molten soil. Battelle spent about 13 years and millions of DOE dollars developing the process from bench-scale through pilot-scale and large-scale testing. The process involves applying electric power to four electrodes imbedded in the soil to be vitrified. The soil melts and forms glass-like and crystalline product similar to naturally-occurring obsidian.

GE became interested in the technology in 1985 as a potential alternative disposal method for PCBs, which are primarily regulated under the Toxic Substances Control Act (TSCA). GE, through a consultant, began evaluating the technology for application to soils containing PCBs and by 1987 was working with the developers at Battelle to put together a program for a large-scale demonstration test on PCB-containing soils. In 1988, GE requested the DOE in Richland to participate in such a demonstration test at Hanford using PCB-containing soils that would be

brought in from a shop site in Spokane, Washington, where PCBs from transformer servicing had been found in site soils. GE intended to involve EPA's SITE program in the demonstration. However, DOE-Richland was facing a budget cutback at the time and declined to participate.

The demonstration test focus then shifted to the site in Spokane which had been recently proposed for listing on the NPL, and planning went forward for the demonstration test. Meanwhile, Battelle formed a new company, Geosafe Corporation, to provide commercial ISV services for remediating sites containing chemicals. GE began working with Geosafe with the intent to perform a demonstration test in 1990 at the Spokane site.

In September 1989, the Spokane site was placed on the NPL with Washington State Department of Ecology (Ecology) as the lead agency. GE was required under an Administrative Consent Order (ACO) to conduct additional phases of remedial investigation and a feasibility study for the site. GE tried to persuade Ecology as the lead agency implementing CERCLA, to allow the demonstration test to go forward in

parallel with the RI/FS work under CERCLA. The demonstration test was finally included in the 1990 ACO as a treatability test.

Geosafe submitted a ISV Demonstration Test Plan and TSCA Permit Application to EPA Headquarters in August 1990 and in September through November, five engineered test cells were constructed on the Spokane site. The cells were filled with about 3,500 tons of PCB-containing soil, concrete, asphalt and sealed 55-gallon drums containing soil. Part of the TSCA permit requirements was a demonstration of achieving a destruction and removal efficiency (DRE) of 99.9999 percent. To demonstrate that destruction efficiency, PCB soils at a concentration of 10,000 ppm were needed. Site soil concentrations were substantially less than that level, so transformer oil which was 73% PCB was imported to the site and mixed with the soil. The "spiked" soil was placed into one of the test cells.

In early 1991, Geosafe was conducting operational acceptance tests (OAT) on its ISV equipment at Geosafe's test site in Richland just prior to coming to Spokane. During the second OAT, which was being conducted on a mock-up of the test cell configuration at the Spokane site,

an incident occurred which resulted in the ejection of molten soil from the melt. Severe damage was caused to Geosafe's equipment. Geosafe then began an extensive and lengthy investigation of the incident and withdrew ISV from commercial application. It was eventually determined that the rapid release of water vapor from the sealed drums was a primary cause of the accident.

In the summer of 1991, EPA Region X's TSCA section sent a letter to GE stating that TSCA-regulated materials "taken out of service" must be disposed of within one year. The transformer oil imported for the TSCA-approved ISV demonstration test was TSCA-regulated material. GE was caught in a regulatory dilemma due to the innovative technology setback. GE had spent well over $1 million in preparing the site for the demonstration test and was then facing the prospect of excavating the test cell area and disposing the material in a TSCA-permitted disposal facility at even more cost for little benefit, since ISV would not have been demonstrated. Further, the removal of any site soils had been strictly banned by the State of Washington. Threatened with EPA Region X enforcement action, GE sought the help of EPA Headquarters to persuade the EPA regional office to exercise administrative discretion in proceeding

with enforcement actions and to work with GE and Ecology to find a solution to the problem. While EPA Headquarters was unsuccessful, the Washington State Department of Ecology finally convinced Region X to grant a two-year waiver of the disposal requirement. This was a glaring example of how a company can do everything correctly, and because of an unforeseen technological setback, still face penalties in applying innovative remediations. Experiences such as this make companies very reluctant to use new technologies.

It is now almost October 1993, seven years after GE first decided to support a demonstration of ISV. The remedy for the Spokane site soils selected by Ecology is vitrification, if a successful ISV demonstration test is conducted at the site. Amendments to the 1990 ISV test plan documents are being submitted to EPA Headquarters TSCA office, with the demonstration test rescheduled for early next spring. Geosafe's ISV process is currently being demonstrated on the Parsons Chemical/ETM Enterprises Superfund site in Michigan and we are hopeful that the Spokane site is next. If the test proves successful, ISV remediation of the Spokane site is planned to occur in 1995, ten years after GE first considered this innovative technology.

* * * *

Finally, with the Committee's permission, I will submit within the next several weeks as an addendum to this statement a paper presenting 10 principles for improving corrective action under RCRA, prepared by the Multi-Industry Corrective Action Group, of which GE is a member. It may be asked, why is a legislative proposal to reform RCRA corrective action being presented at a Superfund cleanup hearing? And why in particular is it attached to a presentation on innovative technologies? First, we urge the Subcommittee to keep in mind that remedy selection under Superfund is very important, but it does not include the entire universe of sites for which remediation is likely to be considered. For many companies, their responsibilities under the RCRA corrective action provisions are likely to far exceed their Superfund involvement. EPA estimates there are 5,800 facilities with over 100,000 solid waste management units (SWMUs) subject to the corrective action provisions. Between 2,600 and 3,400 facilities may actually require corrective action. Estimates of the cost of undertaking this corrective action vary from a very conservative $18 billion to well over $200 billion.

The RCRA corrective action program suffers from many of the same inflexible and overly conservative requirements that hamper the Superfund program. Often where industry has creative ideas about corrective measures, or perhaps innovative technologies, that will be adequately protective of human health and the environment, the rigidities of the RCRA corrective action program prevent our use of those innovative approaches. For RCRA corrective action, we are advocating a remedy selection process along the same lines as GE and other companies are supporting for Superfund. This does not mean, however, that we are seeking a single program for remediation of all contaminated sites. The Superfund program and RCRA corrective action involve different procedural and regulatory contexts, and they should continue as distinct programs.

General Electric Company
1331 Pennsylvania Ave N W
Washington, DC 20004-1769

October 20, 1993

The Honorable Frank R. Lautenberg
United States Senate
Washington, D.C. 20510

Dear Senator Lautenberg:

On September 30, I testified before the Subcommittee on Superfund, Recycling, and Solid Waste Management. In my statement, I requested permission to file a supplemental statement on RCRA corrective action on behalf of the Multi-Industry Corrective Action Group, of which GE is a member. That supplemental statement is enclosed.

Again, I want to thank you for the opportunity to testify. I would be happy to answer any questions relating to my testimony or the statement I am now submitting on RCRA corrective action.

Very truly yours,

Deborah A. Hankins/ag

Deborah A. Hankins
Enclosure

REMEDY SELECTION AND RCRA CORRECTIVE ACTION REFORM: A LEGISLATIVE PROPOSAL

by

The Multi-Industry Corrective Action Coalition

October 13, 1993

The Multi-Industry Corrective Action Coalition wishes to thank the Subcommittee on Superfund, Recycling and Solid Waste Management for this opportunity to submit written testimony on the corrective action requirements of subtitle C of the Solid Waste Disposal Act. In particular, we wish to thank Senator Durenberger for his description of our efforts to reform RCRA corrective action and its pertinence to reform of the Superfund cleanup program, and his inclusion of the Multi-Industry Coalition's "Principles for Improving RCRA's Corrective Action Program" in the record of the September 9th hearing.

During the last Congress Senator Durenberger invited a number of other companies and organizations to join the steel industry to begin developing a broad-based industry consensus on needed changes in corrective action under section 3004(u) of RCRA and related requirements. In addition to the American Iron and Steel Institute, the Multi-Industry Coalition now includes GE, Union Carbide, Dow, Dupont, and other members of the Chemical Manufacturers Association; Sun, Amoco, and other members of the American Petroleum Institute; and the members of the NEDA/RCRA project.

The Multi-Industry Coalition has worked extensively with Senator Durenberger and his staff, and has been meeting with the staff of both this committee and the House Committee on Energy and Commerce to present its legislative principles for RCRA corrective action reform, and the technical and policy basis underlying those principles. (Also helpful in this effort were two sets of briefings for House and Senate staffs, sponsored by GE, in which Dr. John Cherry of the University of Waterloo described the practical difficulties of cleaning up contaminated ground water, particularly where dense, non-aqueous phase liquids (DNAPLs) are involved, and several GE scientists presented information on emerging remediation and site characterization technologies.) In addition to the 10 principles themselves, on which the group has reached an industry-wide consensus, we have been developing more detailed explanations of how the principles would be implemented, and drafts of proposed legislative language, which we hope to submit in the near future.

It may be asked, why is a legislative proposal to reform RCRA corrective action being submitted in conjunction with a Superfund cleanup hearing? And why in particular is it attached to a presentation on innovative technologies? First, we urge the Subcommittee to keep in mind that remedy selection under Superfund is very important, but it does not include the entire universe of sites for which remediation is likely to be considered. For many companies, their responsibilities under the RCRA corrective action provisions are likely to far exceed their Superfund involvement. A 1991 study by the University of Tennessee indicated that the costs of the RCRA corrective action program will substantially exceed the costs of the Superfund

program. EPA estimates there are 5,800 facilities with over 100,000 solid waste management units (SWMUs) subject to the corrective action provisions. Between 2,600 and 3,400 facilities may actually require corrective action. Estimates of the cost of undertaking this corrective action vary from a very conservative $18 billion to well over $240 billion.

The corrective action program suffers from many of the same inflexible and overly conservative requirements that hamper the Superfund program. Often where industry has creative ideas about corrective measures, or perhaps innovative technologies, that will be adequately protective of human health and the environment, we fear the rigidities of the RCRA corrective action program will prevent our use of those innovative approaches. These same problems also pose obstacles to the many companies seeking to undertake voluntary corrective action. For RCRA corrective action, we are advocating a remedy selection process along the same lines as is needed for Superfund. This does not mean, however, that we are seeking a single program for remediation of all contaminated sites. The Superfund program and RCRA corrective action involve different procedural and regulatory contexts, and they should continue as distinct programs.

The procedural context of RCRA corrective action, in fact, does lead us to seek a number of procedural changes, not related to the Superfund program or the remedy selection process itself. Some of these changes, while peculiar to the corrective action program envisioned under section 3004(u) or section 3008(h), are quite important in making the corrective action program effective. These changes probably require legislative amendment of RCRA, and are addressed by several of our principles, so we will discuss them in this statement, as well as those principles focusing on remedy selection. The changes we are seeking in the RCRA corrective action program are intended to produce corrective measures that are fully protective of human health and the environment and are cost-effective and addressed to real risks. These changes will result in more cleanup of contamination, on a faster schedule, than the current program will produce.

The members of the Multi-Industry Coalition have also been working with EPA on possible administrative resolution of industry concerns about the corrective action remedy selection process. Work done as part of the dialogue in connection with the Hazardous Waste Identification Rule (the HWIR process), particularly with respect to contaminated media, may provide important relief on aspects of corrective action that are unnecessarily burdensome. Industry members will continue to explore and encourage the administrative route for making the corrective action program more workable. The Corrective Action Management Unit (CAMU) rule recently drawn from the proposed corrective action rules and separately promulgated, provides some welcome flexibility in the determination of what management standards will apply to materials under the corrective action program. Its effects are limited, however, and the Multi-Industry Coalition feels it is necessary to seek legislative changes in section 3004(u) and related authorities, as well as to continue to work with the Agency on administrative changes.

It continues to be the intention of the Multi-Industry Coalition to work with this Committee and its counterpart in the House, to develop a consensus on what legislative changes are needed in the RCRA corrective action program. Then, those changes could be incorporated into the first relevant bill that seems to be moving toward passage. If a RCRA bill or legislation

addressing key issues in the RCRA program is considered, we strongly urge that corrective action be addressed as part of that bill. Since these issues are parallel to many of those in the Superfund debate, if a bill amending CERCLA is reported first, we ask that amendments to the RCRA corrective action program be included in that legislation. Of course, the questions raised about RCRA corrective action are important enough that the Committee may wish to take it up as a freestanding bill. In any event, the Multi-Industry Coalition will continue to cooperate with the Committee in developing legislation to improve the RCRA corrective action program.

The Multi-Industry Coalition's "Principles for Improving RCRA's Corrective Action Program" are attached to this statement in their entirety. There are 10 principles, which can be combined into four related clusters: remedy selection and the uses of stabilization; management standards and permitting requirements, including expedited cleanups; financial assurance; and clarification of State/Federal lead agency roles.

Remedy selection and the uses of stabilization:

- **Corrective action remediation decisions should be based on sound scientific principles that are consistent with the nature, extent, and potential impact of the contamination, the potential for human health and environmental exposure, and site-specific factors such as land use. [Principle No. 2]**

- **Only those releases that pose a significant threat to human health and the environment should be addressed through corrective measures. Facilities should be required to stabilize such contamination to mitigate risks to human health and the environment. Stabilization requires management of the contamination, not merely erecting a fence around the contamination to restrict access. [Principle No. 3]**

- **Corrective measures should be cost-effective and technically practicable. [Principle No. 4]**

- **Facilities should reexamine the appropriateness of their remediation goals or corrective measures whenever the land use of that property changes or after thirty years, whichever occurs first. [Principle No. 5]**

It is this cluster of RCRA corrective action issues that is most similar to reform of cleanup requirements under CERCLA. As the two programs have begun to be implemented, we have learned some important lessons. The potential cost of corrective action requirements is enormous, with estimates from a conservative $18 billion to $240 billion or more. Clearly, with limited industry and EPA resources, we must find a way to establish priorities among the many potential needs to take corrective action. This program must focus on actions needed to mitigate actual threats to human health and the environment. To make the most use of scarce resources, the corrective action program should work to mitigate threats in the near term at as many facilities as possible, rather than seeking cleanup to pristine levels at a relative few facilities. This strategy, and the judicious choice of remedies on a site-specific basis, will allow us to derive the greatest environmental benefit from the resources expended.

Stabilization consists of taking the necessary corrective measures to abate actual risks to human health and the environment. The determination of actual risks requiring action is closely tied to realistic assumptions about land use. Stabilization actions can include source control, treatment or removal, capping, hydraulic remediation or containment, physical barriers, or combinations of these, in conjunction with robust institutional controls. Stabilization actions must then be revisited and upgraded as necessary, whenever land use or other significant changes occur, to assure that corrective measures remain protective. This approach, using the stabilization concept, allows effective risk reduction actions to be taken at a large number of facilities in a relatively short period of time, rather than spending a long period of time to return a few facilities to pre-industrial conditions.

We were heartened by EPA Deputy Administrator Sussman's recent announcement of a new policy with regard to land use considerations in Superfund remedy selection, that it will not be assumed that all sites will be used for residences. We applaud this move toward more realistic remediation goals.

Our experience with DNAPLs since the passage of the corrective action requirements in 1984 illustrates the need for a new approach to remedy selection. Although DNAPLs are not the only kind of contaminant the corrective action program must address, these chlorinated organic liquids that are immiscible and denser than water (i.e., dense, non-aqueous phase liquids or DNAPLs) are the most prevalent source of industrial ground water contaminants. These contaminants do not simply disperse through the ground water or float in large concentrated pools which can be easily recovered or treated. They tend to exist as residual fractions or small pools at many points, and small amounts continue to dissolve into the ground water as it flows past. With very low MCLs for these substances (5 to 200 parts per billion), even small amounts of dissolved DNAPLs from widely scattered pools or residual fractions can contaminate huge quantities of ground water. We cannot use the pump-and-treat technologies to clean up aquifers contaminated with DNAPLs because the rate of mass removal is far too slow to be consequential -- it may take centuries to remove enough mass of this material to make a difference. The technologies to completely remediate an aquifer contaminated with DNAPLs simply do not exist.

We have learned, however, that we can stabilize and contain the contamination, and that by doing so we can protect human health and the environment. Our proposed approach to remedy selection, therefore, is a blend of near-term containment and stabilization measures, and long-term commitment to each site to assure that human health and the environment will be protected, consistent with the current and currently planned use of the land. This approach is phased and measured:

- Perform a remedial investigation to understand the nature of the contamination and the subsurface geology and hydrogeology.

- Assess the site-specific impact of the contamination, and the human health and environmental exposure, basedf on current or currently planned use of the site. This will allow a realistic risk assessment for the site, to target actual risks that

may need to be addressed by corrective measures, reflecting the current land use and the currently planned land use.

- Take corrective measures adequate to reduce those risks in a phased manner, addressing first those releases that pose a significant risk to human health, then addressing environmental concerns when justified by the additional benefits. As necessary, manage the plume and any concentrated sources of contamination with stabilization and containment approaches.

- Revisit the selection of corrective measures, whenever the land use of the property will be changing. A review should take place after 30 years, even if the land use has not yet changed. It will continue to be a responsibility of the original owner of the RCRA facility to assure that the selected corrective measures are implemented, although that responsibility may be passed on in a transaction transferring the property, or provided for through a fund or some other financial assurance mechanism.

This strategy also provides the opportunity to develop and refine remediation technologies, in order to reduce the enormous cost that may be associated with long-term full site cleanup.

It is a general theme of these principles that corrective measures should be cost-effective and technically practicable. This means that they have to be reasonable and capable of timely implementation, and should be targeted on the most serious risks. Considering cost-effectiveness in corrective measures selection, of course, requires the comparison of the cost-effectiveness of alternative measures, all of which provide adequate protection of human health and the environment.

Generally cleanup of contaminated aquifers to MCLs or background levels cannot be accomplished. It is possible, however, to contain the contamination. For ground water cleanup of the chlorinated organic solvents common at Superfund and industrial corrective action sites, *four basic steps* would replace concentration-based cleanup standards [While these steps are designed to reflect current understanding of ground water cleanup of chlorinated organic solvents, they are adaptable to other contaminants, as well]:

1) The site should be controlled (or stabilized), using the most appropriate technological options for the type of site and contamination. Under an adequate definition of the best stabilization system, for contaminants such as chlorinated organic solvents, a site owner or operator would not be required to do the most that technically could be done. The maximum use of a technology would not be required, for example, where the incremental benefits in reduced contamination were out of proportion to the substantial costs of achieving that reduction. Some examples of acceptable methods of stabilization include caps, cutoff walls, and other ground and surface water diversion structures; source area measures; reaction walls (with a catalyst, such as a "rust wall", or with biological action) or similar passive technology; hydraulic containment (to pump ground water to change the hydrological gradient; as a control technique, rather than as cleanup; in some cases, pump and treat may be used to reduce the size of the plume); in-situ

biological remediation; and in-place chemical stabilization for metals. Institutional measures to assure the integrity of isolation and passive treatment methods, and to prevent exposure, would be acceptable additions to a stabilization program, but not ordinarily the sole elements of such a program.

2) The site owner should assess the impact of the plume and take reasonably available steps to prevent further spread of contamination, except where the incremental environmental benefit would be slight compared to the effort and cost of such steps.

3) In choosing management options, site-specific conditions should be considered, including current and currently planned use of the property, as well as the ability of attenuation and other naturally occurring processes to reduce the contamination. The owner or operator of each facility subject to required corrective action measures should reexamine the appropriateness of their remediation goals and corrective measures whenever the land use of that property changes or after thirty years, whichever first occurs. The review at 30 years would assure the continued integrity of the selected measures, and consider whether the selected measures are still adequately protective of human health and the environment, taking into account current and currently planned land use at that time. The management period will allow the development of a good base of knowledge about the site, hydrology, nature of contamination, etc., on which to base a decision whether to continue to manage or to clean up the plume. A phased financial assurance requirement or other mechanism will provide funds sufficient to assure a protective cleanup of the contamination if additional cleanup is necessary.

4) The "stabilization" option would only be allowed for existing contamination, not as a rationale to allow new contamination. Moreover, through voluntary programs or programs undertaken under other authority, the facility involved in corrective action can emphasize pollution prevention. Many companies already have begun pollution prevention programs, and these can become part of the corrective action strategy.

Section 3004(u) is broad and general, and will require considerable definition to establish a workable program. Unlike the Superfund program, remedy selection under RCRA corrective action is not driven by ARARs, but by the land disposal restrictions (LDRs) and minimum technology requirements of RCRA itself. The selection of corrective measures is not tied to the preference for permanence of remedy and treatment of contaminated materials that tends to skew the Superfund remedy selection process, but to LDRs and the basic premise that seems to underlie section 3004(u), that every release from a SWMU constitutes an unacceptable risk. LDRs and minimum technology requirements were developed in part to encourage waste minimization, and are inappropriate and counterproductive when applied to remediation. Attached is a case study that illustrates how these requirements and assumptions in the corrective action program can interfere with the selection of a sensible and fully protective remedy. These rigid requirements can be modified, however, in a manner that is fully protective of human health and the environment, using the stabilization or containment model.

Management standards and permitting requirements:

- **Remediation activities that are conducted in compliance with a plan that is approved by either a State or Federal regulatory authority, should not be required to either receive a RCRA permit or to comply with RCRA's land disposal restrictions or minimum technology requirements for land-based units. [Principle No. 6]**

- **The corrective action implementation process should be separated from the facility's RCRA operating permit. Facility-wide corrective action, however, would still be required for any facility seeking a RCRA permit. [Principle No. 8]**

- **The regulatory obstacles for facilities that want to undertake voluntary or accelerated corrective action should be reduced. [Principle No. 10]**

- **Corrective measures should be cost-effective and technically practicable. [Principle No. 4]**

Corrective action activities take place under intense regulatory scrutiny with many review and approval steps. Permits should not be required for on-site remediation activities (such permits are not required under CERCLA) or for other remediation activities specified in a corrective action plan such as those required under proposed subpart S. Obtaining such permits creates significant delays in a corrective action program. Approval of the corrective action plan by either EPA or a State, with appropriate public review and input, would still be required.

Land disposal restrictions treatment standards and minimum technological requirements of subtitle C should not apply to management of remediation wastes or contaminated media. These requirements seek to minimize the short term and long tern threat to human health and the environment by preventing mismanagement of newly generated process wastes in the first instance. Remediation wastes, however, are already on, or in, the ground. Furthermore, LDR treatment standards were developed solely on the basis of the performance of demonstrated treatment technologies, and do not reflect the actual risks posed by remediation wastes, which are typically mixed with other media. In many cases, these LDR treatment standards may preclude the use of innovative treatment technologies that do minimize the risks, but are not capable of meeting the technology-based standard. While the agency is currently reevaluating the treatment standards as they apply to contaminated media, this reexamination may still fail to take into account site-specific risk-based considerations. The full LDR requirements are counterproductive when they act as a disincentive to sensible treatment or redeposition of the material in a more secure setting, which does not technically meet the LDR requirements. The Agency has accepted this concept of excepting corrective action remediation wastes from LDR requirements, in the CAMU rule. Such needed reforms are the subject of the ongoing Hazardous Waste Identification Rule (HWIR) contaminated media dialogue. We support broadening the concept to other circumstances where remediation wastes may be handled, but which do not qualify for the CAMU determination.

The corrective action implementation process should be decoupled, or separated, from the process of granting the subtitle C operating permit for the facility. Facility-wide corrective action would still be required for all TSDFs seeking permits under subtitle C, but permits for TSDF operation should be considered and issued separately from corrective action requirements. RCRA permitting is a time consuming process which slows down cleanups; likewise, operating permits should not be slowed by the need to work out the details of a remediation program for the facility, as long as there is an enforceable requirement in the permit that will lead to the timely adoption and implementation of corrective measures.

The current program often erects roadblocks to efforts to voluntarily clean up some contamination discovered by the property owner. Industries often want to clean up contamination to reduce their liability, to expand or upgrade their facilities, or to prepare a property for sale. They may want regulatory oversight, and possibly a sign-off, with the accompanying community acceptance. Industries prefer to avoid, however, slow, complicated bureaucratic programs, and they do not wish their voluntary actions to expose them to unnecessary permits, facility-wide corrective action requirements (if they are not already subject to them because of a RCRA operating permit), financial assurance requirements, or other entanglements. Even where the property is being cleaned up for sale or some changed use by the current owner, the level of cleanup ought to reflect the actual intended use, not an unrealistic assumption about possible residential use at some point in the future. Such a voluntary corrective action program might consist of a site assessment and a cleanup plan submitted by the owner, with a risk assessment substantiating the protectiveness of the cleanup for the intended use of the property, with plan approval by the State and a State certification that the work was done in accordance with the approved plan.

Financial assurance:

- **A facility's financial responsibility requirements for corrective action should be keyed to facility-specific schedules so that the financial ability of the owner or operator to implement such measures is maintained. [Principle No. 7]**

EPA has proposed to extend the financial assurance requirements to all solid waste management units requiring remediation under the proposed corrective action program. Although the details are not yet established, it seems likely the Agency will require financial assurance for corrective action under the same rules as it applies to operating facilities. These rules allow three types of mechanisms for demonstrating financial assurance: (1) setting aside funds in a trust fund; (2) obtaining a third-party guarantee of an available source of funds (e.g., a letter of credit, or insurance); or (3) passing a test of corporate financial strength, as a self-insurer.

The costs of corrective action, whether on a facility basis, or for an entire industry, are massive. The usual methods of demonstrating financial assurance may not work. The costs of the entire corrective action program are estimated at as much as $240 billion. Even the low estimate of $18 billion will have high per-facility costs. A study by Remcor, Inc., for the American Iron and Steel Institute estimated that the cost of corrective action for the domestic steel industry could be as high as $2-3 billion. A draft American Petroleum Institute analysis indicates that corrective action could cost as much as $60 to 300 million per petroleum refinery.

Traditional financial assurance mechanisms, in most cases, must be fully collateralized; that is, each dollar of required financial assurance must be guaranteed by a real dedicated dollar set aside. These mechanisms are impractical for the large costs of the corrective action program. Conventional commercial insurance is not available except on a fully collateralized basis. Captive insurance companies have only limited applicability, especially since State insurance regulators require greater liquidity (cash equivalent assets) in the captive insurer as the size of the exposure increases.

Self-insurance is not always an option, because the financial tests that companies must meet require that net worth and working capital equal at least 6 times the potential environmental cleanup liability, and that operating income be at least 10% of total liabilities. The high cost of corrective action makes it unlikely that even healthy companies could meet this test.

We recognize that a workable financial assurance system is essential to full use of the stabilization strategy we are suggesting. To avoid requiring companies to put up the total costs of eventual cleanup up front, as part of a financial assurance requirement, and therefore eliminating the economic benefits of the phased corrective action program we are advocating (and possibly putting the company out of business before it can implement its corrective action plan), a financial assurance requirement must be based on these principles: A facility's financial assurance requirements for corrective action should be keyed to facility-specific schedules for the implementation of corrective measures, so that the financial ability of the owner or operator to implement such measures is maintained. Such requirements should not require demonstration at one point in time of financial responsibility sufficient for the total costs of all corrective measures to be undertaken at the facility. The company subject to corrective action requirements should be able to fulfill its financial assurance obligations through any combination of insurance, guarantee, surety bond, letter of credit, trust agreement, or qualification as a self-insurer. The financial test to qualify as a self-insurer should reflect modern accounting practices and be flexible enough to automatically compensate for changes in generally accepted accounting practices. (For example, other post employment benefits (OPEB) should be treated as any other non-cash charge such as depreciation, etc.)

Clarification of State/Federal lead agency role:

- **Corrective action for a specific site should be the responsibility of either the State or the Federal government, but not both. [Principle No. 9]**

The State/Federal lead should be clarified so that only one entity has responsibility for a particular facility. When the State has the lead, remedial activities may be carried out pursuant to State authorities other than RCRA or State Superfund laws (e.g., ground water protection authorities) where the incremental benefits of any such laws exceed the incremental costs of meeting such requirements.

Again, the Multi-Industry Corrective Action Coalition wishes to thank the Subcommittee for the opportunity to submit testimony on needed reforms in remedy selection and other aspects of the RCRA corrective action program. We would be pleased to answer any questions, and look forward to working with the Committee on legislation to reflect our concerns.

PRINCIPLES
FOR
IMPROVING RCRA'S CORRECTIVE ACTION PROGRAM

1. The RCRA corrective action program enacted at § 3004(u) should be improved to enhance its results.

2. Corrective action remediation decisions should be based on sound scientific principles that are consistent with the nature, extent, and potential impact of the contamination, the potential for human health and environmental exposure, and site-specific factors such as land use.

3. Only those releases that pose a significant threat to human health and the environment should be addressed through corrective measures. Facilities should be required to stabilize such contamination to mitigate risks to human health and the environment. Stabilization requires management of the contamination, not merely erecting a fence around the contamination to restrict access.

4. Corrective measures should be cost-effective and technically practicable.

5. Facilities should reexamine the appropriateness of their remediation goals or corrective measures whenever the land use of that property changes or after thirty years, whichever occurs first.

6. Remediation activities that are conducted in compliance with a plan that is approved by either a state or federal regulatory authority, should not be required to either receive a RCRA permit or to comply with RCRA's land disposal restrictions or minimum technology requirements for land-based units.

7. A facility's financial responsibility requirements for corrective action should be keyed to facility-specific schedules so that the financial ability of the owner or operator to implement such measures is maintained.

8. The corrective action implementation process should be separated from the facility's RCRA operating permit. Facility-wide corrective action, however, would still be required for any facility seeking a RCRA permit.

9. Corrective action for a specific site should be the responsibility of either the state or the federal government, but not both.

10. The regulatory obstacles for facilities that want to undertake voluntary or accelerated corrective action should be reduced.

COALITION ON SUPERFUND

TESTIMONY

BEFORE THE

SUBCOMMITTEE ON SUPERFUND, RECYCLING, AND SOLID WASTE MANAGEMENT

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

U.S. SENATE

This testimony is submitted on behalf of the Coalition on Superfund with regard to the remedy selection process. The Coalition is comprised of representatives from four major industry groups: manufacturing, natural resources and chemicals, insurance, and environmental services. The Coalition's members possess specific expertise in various aspects of the Superfund program and are dedicated to applying that expertise to improve the federal program for remediation of contaminated sites. The Coalition has recently published research papers on a number of remedy selection issues. However, since its inception in 1987 the Coalition has been dedicated to addressing all aspects of the Superfund law and program and their implementation.

The Coalition on Superfund advocates comprehensive review and reform of the current Superfund program. To help facilitate this reform, the Coalition is evaluating alternatives to the current liability scheme, remedy selection, refinement of program administration and implementation. The Coalition is committed to developing recommendations on these issues in a timeframe that is meaningful to Congress and the Administration.

Many diverse interests perceive Superfund as a failed program. There are many reasons for this perception. For example, some of Superfund's problems stem from conflicting goals and objectives. In assessing this issue, the Coalition commissioned a study of Superfund's goals. That study said in part:

> The root of the multi-level controversy that surrounds Superfund is a profound lack of consensus among Congress, EPA, other federal agencies, the regulated and environmental communities and other interested third parties about both the means and ends embodied in Superfund.[1]

What is success to one party may be failure to another.

As a question of public policy the Coalition believes that the most critical issue confronting the Superfund program is establishing a reliable and aggressive pace of action at sites. Improving action at Superfund sites involves addressing all the principal elements of the law and program — remedy selection, liability/funding and program administration. The current hearings are examining issues associated with the remedy selection process. While a number of improvements in the remedy selection process are essential, it is equally important to recognize that both the liability and program administration elements of the Superfund law also affect the efficiency and effectiveness of site remediation. Each of these also need comprehensive review and reform.

Liability — The Superfund liability process adversely influences the remediation process. It is perceived as unfair, particularly as applied to activities undertaken in the past that were legal or even regulated at the time. It disadvantages U.S. industry in the global marketplace. It can prevent economic redevelopment of industrial sites, often in urban areas badly in need of revitalization. Finally while the threat of financial penalty may affect waste handling practices in the future, it cannot change past actions.

The liability process also diverts scarce resources to pursuing parties rather than remediation. Every participant is driven to protect themselves and seek the fairest result they can. For industry, this generally means trying to assure that all parties who contributed to the problem also contribute to remediation costs. This process leads to difficult and time-consuming negotiations and transaction costs. Under the current liability scheme, the federal government anticipates and spends resources to support litigation rather than remedies.

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[1] *The Goals and Indicators of Progress in Superfund*, The Center for Hazardous Waste Management, Illinois Institute of Technology/IIT Research Institute, September 1989.

Allocation of remediation costs is often difficult due to incomplete information and the need to pay for those PRPs who are no longer solvent or in existence. For financially sound parties, the current scheme can result in roughly billing them relative to their waste contributions. However, for PRPs with limited resources, the legal costs of negotiating and defending their interests can bankrupt them before ever reaching an allocation of responsibility. Perhaps as importantly, Superfund can prevent these financially limited PRPs from access to capital because of the open ended nature of the liability and remediation costs thereby threatening their future financial viability.

Because of the significant issues raised by the liability provisions of Superfund, the Coalition on Superfund is evaluating a number of potential changes — issues that should be considered as a part of a comprehensive review of the Superfund law and program and their implementation. These include: replacing site-by-site retroactive liability when a viable alternative for funding is found; fairly allocating liability among contributors at a site; using the fund to pay for orphan shares at sites; and, improving the settlement provisions of the law.

Program Administration — As a second element of the Superfund program that can directly influence the remedy selection process, administration of the Superfund program can be critical. The term "Program Administration" is intended to capture such wide ranging elements as public participation, state roles, contracting policies and direct management issues. These relate to remedy selection in different ways, but each can be significant.

If public involvement in remedy decisions is inadequate, public support for the selected remedy can turn to opposition. Public opposition to remedies means delay. The Coalition on Superfund supports a strong role for the affected public early in the process.

Currently, state roles are limited. Principally, states participate in the remedy selection process through (1) imposing their state standards as ARARs and (2) their authority to request review of remedies that they find inadequate, including requiring a more stringent remedy provided they pay for the difference in cost. Depending on the specific state or specific site, the state role can be positive or negative. The future Superfund program needs to stabilize the role of states in a

way that can improve the pace of action. Either the state of the federal government should have primary responsibility for site remediation, not both.

Remedy Selection — The Coalition on Superfund has been active in analyzing the remedy selection process. It has commissioned four studies:

- *Breaking the Backlog: Improving Superfund Priority Setting*[2]
- *Prioritization of Actions at Superfund Sites*[3]
- *Striking a Better Balance: Improving Superfund Cleanup Decisions*[4]
- *Technology Capabilities versus Superfund Cleanup Requirements: Is There a Gap?*[5]

These analyses were developed by third-party experts in the Superfund area. In addition, the Coalition conducts "dialogue meetings" in support of its research and outreach efforts. In each dialogue group, knowledgeable public policy leaders, government representatives, environmentalists, academics, educators, and researchers meet to discuss issues, offer alternatives and, if possible, identify common ground. Summary minutes of each dialogue group are made available to the public and other interested parties.

Based on the information acquired through these efforts, the Coalition has developed a series of recommendations regarding changes to the Superfund remediation process.

- The Need for Prioritization at Superfund Sites — The Congressional Budget Office calculates that $8.9 billion dollars have been appropriated over

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[2]*Breaking the Backlog: Improving Superfund Priority Setting*, prepared by The Massachusetts Institute of Technology, under contract to Arthur D. Little, February 1992.

[3]*Prioritization of Actions at Superfund Sites*, prepared by Putnam, Hayes & Bartlett, Inc., March 1992.

[4]*Striking a Better Balance: Improving Superfund Cleanup Decisions*, prepared by Arthur D. Little, May 1992.

[5]*Technology Capabilities versus Superfund Cleanup Requirements: Is There a Gap?*, prepared by Arthur D. Little, February 1992.

the first ten years of the Superfund cleanup program. The resources spent on the program go well beyond that amount, however, when the contributions of potentially responsible parties are added. According to a study by the University of Tennessee, Superfund remediation could range in cost from $106 billion to $704 billion over 30 years, depending on the stringency of the program's requirements. Given the magnitude of the problem, it is important that a prioritization process be used based on an evaluation of actual current and/or likely future risk to human health and the environment. A prioritization system would better direct the nation's resources to those sites which pose the most serious threat to the surrounding environment. This paper presents the Coalition on Superfund's recommendations toward implementing such a necessary prioritization scheme.

The U.S. Congress' Office of Technology Assessment estimates that as many as 439,000 sites may be candidates for the Superfund program. The risk presented by these sites is uncertain. Resources should be used to identify sites with the greatest actual current and/or likely future risks and action should be initiated at those sites first. Where risk is unlikely, EPA should reassure the public that it is not at risk. A prioritization system that is comprehensible to the public must be developed to sort Superfund sites early in the process so that resources can be directed toward sites posing the greatest risk.

A reassessment of the program is underway through EPA's proposed Superfund Accelerated Cleanup Model (SACM) to streamline the process. The development of SACM demonstrates that EPA recognizes prioritization as an important issue. The Coalition position on the need for prioritization at Superfund sites based on actual current and/or likely future risk is one that all stakeholders and interested parties can consider a key component of an effective Superfund program.

Sites should be prioritized on the basis of the risk they pose. An improved evaluation of risk and a prioritization system should be based on the following process.

1. Prioritize sites or action at sites to address actual current and/or likely future risks first.

The Coalition on Superfund recommends that the overall objective of a priority-setting scheme should be to reduce the risk posed by the nation's hazardous waste sites by addressing greatest risks first. Furthermore, site remediation decisions should be made according to a system that prioritizes actions based first on the imminence of the risk and second on the level of risk.

- Most serious actual current and/or likely future risks;
- Less serious actual current and/or likely future risks; and
- Unlikely future risks.

SITE PRIORITIZATION EXAMPLE — *Needing to Look at Real Risk*

The potable water supply aquifer beneath Olean, a small town in eastern New York, was determined to be contaminated with chlorinated solvents in 1980. Based on an initial cursory evaluation of site conditions, the entire aquifer, which is referred to as the Olean Wellfield, was listed as a Superfund site in 1982. Subsequently, following a detailed remedial investigation and feasibility study (RI/FS) effort, three local industries were identified as potentially responsible parties (PRPs) at the site. Under the direction of a Unilateral Administrative Order (UAO), these industries funded the installation of two air stripping units on the existing City water supply wells. Additionally, the PRPs paid for the extension of the city water supply into the adjoining township, which had been identified as containing contaminated residential drinking water wells. By this action, the potential for exposure of users to the contaminated groundwater was eliminated and the City was able to return to the use of groundwater as a source of their potable water supply. At this point in the project, instead of reranking the site based upon the modified site conditions (i.e., no remaining groundwater users and effective treatment of the contaminated groundwater), the agency personnel instead turned their attention to performing a "supplemental" RI/FS study, in order to identify all sources of the groundwater contamination within the community. While this investigative activity revealed several possible sources of the groundwater contamination, it has not indicated that remediation of these sources will in any way expedite the ultimate time needed to remediate the contaminated aquifer. Nevertheless, the agency continues to expend additional monies and resources in pursuit of ultimate source control remediation, even though the actual risk associated with the site is now considered to be minimal.

2. **Evaluate risk early. Take immediate action where actual current and/or likely future risk exists. Conduct iterative assessments of the site, basing subsequent remediation decisions on the actual current risk posed by the site.**

SITE PRIORITIZATION EXAMPLE — *The Need for Iterative Assessments*

At the former Osborne Landfill, a privately operated landfill in Pine Township, Pennsylvania, USEPA personnel performed a "drive by" survey of the site and subsequently listed it on the initial National Priorities List (NPL) in 1982, based in a large part upon the presence of over 600 waste drums at the site. In response to this listing, a local industry, who had been identified as a PRP, signed an agreement with the state environmental agency and performed interim remedial measures (IRM) that included the removal of 603 drums along with other visibly stained soil at the site. Instead of reranking the site based on the modified site conditions, the agency required the PRP to perform a RI/FS study at the site. The results of the RI/FS activity indicated that the actual risk at the site was not as substantial as initially estimated by the agency. Nevertheless, the agency proceeded to perform a second, supplemental RI/FS study at the site that, in effect, verified the findings of the initial site work. At this time, instead of reranking the site based upon the new site sampling data, the agency proceeded to issue a Record of Decision (ROD), which directed the PRP to perform extensive soil and groundwater remediation. By the agency's own admission, the ultimate risk associated with the site was not considered to be significant.

A risk-based prioritization process for the nation's hazardous waste sites is needed. This process would accomplish two goals. First, it would identify sites with significant threats requiring immediate action; second, it would funnel the remaining sites into "other action" categories. Such a prioritization scheme would use a qualitative, subjective analysis early in the process to identify and respond to actual current and/or likely future risks. Longer term actions at a site would be prioritized using more quantitative information based on site and exposure data. An initial risk analysis would allow immediate allocation of federal, state, local and private resources to sites most deserving of attention.

This risk-based prioritization process could be applied at stated intervals or could be triggered by remedial action, changes in the use of the site, the imminence of the threat, or other factors, to update the priorities of the nation's hazardous waste program.

3. Consider availability of proven, effective technologies in prioritization decisions.

SITE PRIORITIZATION EXAMPLE — *The Need for Proven Technology*

At a former manufacturing facility in Hellertown, Pennsylvania, the agency personnel listed the site on its NPL based upon the historical presence of five onsite wastewater lagoons. In cooperation with the agency, the facility owner performed an extensive RI/FS study at the site. The data generated from the RI/FS activities indicated that, although groundwater contamination existed beneath the site, all groundwater contamination was apparently discharging to a stream that was located within one-half mile of the site. Additionally, no groundwater users were identified between the facility and the discharge point to the stream. Furthermore, samples of stream water indicated no detectable levels of contaminant. At this point, instead of reranking the site based upon the hydrogeologic conditions identified during the RI/FS activity, the agency choose to issue a ROD that called for the installation of a very expensive and technically questionable groundwater recovery and treatment system. Coincidentally, a second Superfund site, which was located less than one mile from the facility, was undergoing similar agency scrutiny. There was no PRP identified for the second site, so it was designated as an agency-funded site. The hydrogeologic conditions at the second site were very similar to those identified at the initial facility. Ironically, the agency opted to forego the installation of groundwater recovery and treatment at the second site, opting instead to allow the site to undergo "natural attenuation."

In addition to prioritizing remediation actions based on risk, the prioritization process should also consider the availability of effective technology. Under the Coalition's recommendation, if effective technology is unavailable, the site would move into a "monitor and control" category. Under this category, the site would be monitored and the risk would be controlled using existing technologies. Until available proven technology is developed to address the contaminants at the site, the site would remain in the monitor and control category. These actions will reduce risk by preventing off-site migration while spending resources on other sites that can be successfully remediated.

◆ Remedy Selection and Risk — Several factors drive the remedy selection process, including risk, EPA's preference for permanence and treatment, and applicable or relevant and appropriate requirements (ARARs). Assumptions of human health risks at sites and assumptions inherent in environmental standards established under other federal or state statutes

influence Superfund remedy selection decisions. The estimation of risk is based on assumptions that highly susceptible people and organisms will always be exposed to risks for long periods of time. These conservative assumptions are applied at most sites, regardless of their current or planned use. Furthermore, the Superfund program does not balance the costs of remediation with the benefits received. The result typically is the misallocation of resources to sites with little or no actual current or likely future risk.

A study by the U.S. Congress' Office of Technology Assessment, *Coming Clean*, agrees that remedy selection decision makers at a majority of Superfund sites are misinformed because they give equal weight to actual current risks and hypothetical future risks. As a result, the remedies selected may be overly stringent.

The decision making process for addressing remedy selection and site remediation should be more clearly defined and focused by using the following concepts.

1. Basing the level and extent of the remedy selected on the current or currently planned use of the site.

Superfund decision making does not take into account the current or currently planned use of the site. The remedy selection decision often assumes that each site will be used for residential purposes. Some sites, however, may be used for other purposes, such as industrial uses, and the possibility of them becoming residential sites is extremely remote. Currently, very conservative assumptions regarding future land use are used by EPA in the performance of any risk assessment activities. Unfortunately, the agency's "worst case" assumptions of land use and exposure almost ensure that a site's productive use will be restricted or prohibited for at least 30 years. Future cleanup decisions should consider "most likely" future land use based on historical perspective. For example, it is very unlikely that a highly industrialized area in New Jersey will be converted to residential use in the foreseeable future. Similarly, it is not reasonable to assume that an area which has access to city water will rely on the use of residential groundwater wells in the future.

To ensure efficient and effective allocation of resources, the current or currently planned use of the site must be considered in the remedy selection decision

REMEDY SELECTION EXAMPLE — *Inappropriate Assumptions as to Current or Future Land Use as Factor in Remedy Selection*

The Willow Run Sludge lagoon site in Ypsilanti, Michigan is approximately five acres in size and surrounded by an inactive landfill, a cargo airport, a sewage treatment plant and an active manufacturing facility. Two major PRPs offered in 1988 to perform a Remedial Investigation/Feasibility Study (RI/FS). Disagreements between U.S. EPA and the PRPs over the scope of work continued for five years and resulted in significantly increased transaction costs and lengthy delays in completing the RI/FS.

The parties disagreed over future land use projections which were to form the basis for calculating the human health risk. The PRPs argued that the site is isolated without convenient access which allows a common sense conclusion that with reasonable security measures, there will be no exposure pathways.

In contrast, EPA initially proposed a residential scenario. The conflict over this issue continued for over a year, during which time EPA changed its position several times, A subsequent EPA scenario included an industrial/commercial land use in which a worker in the area would spend his/her entire lunch hour wading in a drain, and would repeat such behavior three times a week for 20 years. EPA's final position offered a scenario that assumed the sludge would be removed from the lagoon and spread around the area, and that a worker could thus be exposed to dried sludge eight hours per day, 250 days per year, for 25 years. EPA's position ignored the site's location, the zoning of the property and the uses of neighboring properties.

EPA also insisted on an ecological assessment which would include an assessment of the risk posed by the site to mink. The PRPs determined that no mink were present on the fenced site at the time and in the opinion of an expert, the site area was not a suitable mink habitat anyway. Discussion of this issue continued for several months.

making process, rather than basing remedy selection on the assumption that residential use will always prevail. Therefore, the Coalition recommends that the level and extent of the remedy selected be based on the current or currently planned use of the site. The Coalition also recommends that special procedures be established to evaluate sites where future use is unknown.

2. Basing the level and extent of the remedy selected on actual current and/or likely future risk.

REMEDY SELECTION EXAMPLE — *Inappropriate Assumptions as to Current or Likely Future Risk as Factor in Remedy Selection*

The Hunt's Disposal Landfill is a 35-acre landfill in a rural area of southeastern Wisconsin where the site owner accepted municipal and industrial wastes AND flammable liquids which were used to induce burning of the solid waste.

In EPA's view the predominant risk posed by the site was ingestion of contaminated groundwater under a residential use scenario. EPA viewed this as a potential future risk, as the only drinking water wells within one mile are upgradient.

The selected remedy included fencing, consolidation of the contaminated soil and sediment into the landfill; capping the landfill and constructing a slurry wall around the perimeter; extracting groundwater for off-site treatment; constructing a (methane) gas collection system; and filing a deed restriction.

In the PRPs' view, EPA's assumption of residential land use exaggerated the actual human health risk posed by the site. The selected remedy consequently included actions that provided marginal benefit at significant costs. The major point of disagreement between the PRPs and EPA related to groundwater and the most contentious single issue was the appropriate point of compliance for groundwater treatment. EPA's hypothetical future residences constructed on top of the landfill would be served by individual drinking water wells installed through the landfill. Therefore, the point of compliance with groundwater standards was established as being within the landfill (and slurry wall). This is inconsistent with the containment approach reflected in the other remedial measures. The PRPs anticipate perpetual treatment of water that may never be used as a drinking water source.

Superfund remedy selection is based on hypothetical future risk rather than actual current and/or likely future risk. Remedies do not sufficiently consider the likelihood or the controllability of risk. A remedy selection process that disregards these factors results in an inefficient allocation of resources because it addresses all risks equally, regardless of the threats posed. Risk, rather than standards developed for other purposes (e.g., ARARs), should drive the remedy selection process.

EPA currently utilizes a "reasonable maximum exposure" scenario in its risk assessments. It is our experience that the alleged exposures calculated by the agency using this scenario are in fact "maximum," but are in no way "reasonable." Furthermore, the methodology used by the agency has not kept pace with developing risk assessment protocols. New techniques, such as "Monte Carlo" simulations give a more realistic approximation of the actual risks associated with a given set of site conditions. Another shortcoming of the agency's risk assessment protocol is that it only uses the worst (or highest) contaminant data generated during site assessment activities. For example, if 100 soil samples are collected at a site and only one sample indicates the presence of a contaminant, that piece of data is used to calculate the "reasonable maximum exposure," while the other 99 data points are ignored. Such an approach obviously overstates the actual risk associated with the site. Notwithstanding these limitations, costly EPA remedial decisions are based on this unrealistic risk assessment protocol.

Therefore, the Coalition on Superfund recommends that the level and extent of the remedy selected be based on actual current and/or likely future risk. For example, the calculated risk associated with a site that is leaking contaminants into an aquifer used as a drinking water supply should be higher and thus warrant a more extensive remedy than a site leaking contaminants into a saline aquifer that is unlikely to ever become a current or anticipated water supply. Basing remedy selection decisions on actual current and/or likely future risk can assure remediation actions that are both responsive and protective of human health and the environment, as well as assure a more efficient allocation of resources.

3. Factoring cost-effectiveness into remedy selection.

The current Superfund program does not formally balance the cost of the remedy selected with the benefits received. This process results in remedial expenditures that are not commensurate with the benefits received. The Coalition on Superfund recommends that EPA consider the benefits of remedy selection decisions, in terms of risk reduction, the principal benefit from site remediation, while maintaining the overall goal of protecting human health and the environment. By considering benefits, the Superfund program will assure that maximum benefits can be received from the resources expended.

REMEDY SELECTION EXAMPLE — *Factoring Cost-Effectiveness into Remedies*

Industrial waste was disposed into pits and low areas of a four acre rural Michigan site in the mid-1960's. The site has been the subject of government response actions since September 1979 when the State conducted a drum removal and soil excavation from the largest source area. After hydrogeologic investigation, the site was listed on the NPL in 1983 due to concerns over PCBs and DDT in soils and VOCS and metals in groundwater.

The PRPs and EPA have been negotiating a final remedy since late 1989 when 12 PRPs offered to clean up soil to a 10 ppm PCB standard. EPA rejected that offer, executing a Record of Decision calling for soil excavation and incineration of PCBs to a 1 ppm PCB level. The PRPs refused to implement the ROD, arguing excavation and incineration was an excessively stringent remedy for PCBs located approximately 30 feet below the surface. Regardless of the level of PCB concentration, exposure pathways did not exist for the PCB-contaminated soil located at that depth.

Remediation of the groundwater is proceeding. No agreement has been reached regarding soil remediation. Although the parties appear to be moving toward compromise on the soil excavation issue for practical reasons, EPA has not acknowledged the underlying cost-effectiveness arguments that favor leaving the PCBs at 30 feet depth in place versus excavating them. As the parties have continued to disagree over the appropriate final remedy, the PRPs have incurred nearly $1 million in consultant and legal fees once the ROD was signed in 1990.

◆ Technology Capabilities and Limitations — Available technologies are sometimes incapable of reducing hazardous waste contaminants to required remediation levels. This is attributable to two factors. First, available technologies may be technically incapable of achieving desired remediation levels. Second, site-specific factors may prevent technologies from achieving full remediation potential.

According to the U.S. General Accounting Office, the development of new technologies has been hampered by the lack of data and by EPA policies that discourage use of unproven technologies. Difficulty in matching new remediation methods with the requirements of existing sites leads to reliance on outdated, costly remediation technologies.

TECHNOLOGY EXAMPLE — *Pushing Technology Beyond Its Limits*

At a Superfund site in Louisiana the EPA proposed to field test two innovative technologies. The PRP realized that both were totally impractical at this site. Numerous meetings and a lot of correspondence was exchanged relating to the feasibility of the technologies. Contractors were contacted and bids were prepared but none of the contractors ever visited the site and evidently didn't even receive very extensive site data. For example, one of the contractors utilized a technology that involved in-situ soil stripping using large augering equipment. The process required essentially debris free soil and was generally designed for small area sites. This site was full of debris, such as railroad ties, and was a large site. When the contractors finally visited the site and reviewed the site data and site conditions both concluded that their technology was totally infeasible and were very upset that their time had been wasted. Needless to say the PRPs had the same, but probably stronger, feelings.

This experience was evident from the study conducted by the Coalition on Superfund, *Technology Capabilities versus Superfund Cleanup Requirements: Is There a Gap?*[6] Observations from the conclusions of that study state in part:

> There are very limited, acceptable technology performance data available in the literature that allow the type of analysis attempted here. There are dozens if not a few hundred contaminants frequently found in myriad combinations and in all sorts of waste matrices at Superfund sites, and yet the 1990 EPA SITE program summary report mentions only 18 demonstrated innovative technologies and another 31 promising, emerging technologies potentially capable of dealing with select waste streams.
>
> Data reliability and reproducibility is an important weakness of existing technology performance databases. With the exception of the SITE reports, sampling and analytical methodologies and protocols are only partially addressed in the literature. The performance data for the fifteen technologies reviewed for this study originated from the following sources: seven technologies were supported by vendor data, four by data from government-

[6] *Technology Capabilities versus Superfund Cleanup Requirements: Is There a Gap?*, prepared by Arthur D. Little, February 1992.

sponsored efforts, three by SITE program data, and one by academic research data. Hence, nearly half the technologies examined have data only of vendor origin and are unlikely to have been critically reviewed by independent parties.

There is an almost complete lack of important operational information in many of the available source documents. The most useful data are found in EPA's SITE reports. However, the performance data reported there are for specific Superfund wastes. Feed characteristics are rarely varied. The vast majority of source documents do not at all, or only partially, describe key process data such as feed characteristics (crucial for soil-based waste streams), and operating parameters. Virtually no report discusses performance sensitivity with respect to varying operating conditions.

The difficulty this study encountered in compiling a broad range of acceptable technology performance data points to a key Superfund problem: *The currently available information system and data banks for providing remedial planners and analysts with the necessary data to make informed and efficient remedy selection decisions are inadequate.* This is significant because this lack of a broad range of acceptable technology performance data impairs the efficiency of the Superfund remedy selection process. In the absence of a comprehensive technology database, site-specific feasibility study efforts are overly resource intensive, technology decisions may not be sufficiently well-informed, and the remedy selection process at most sites takes exceedingly long.

The lack of data on emerging technologies leads to an unwillingness to use them. Furthermore, when innovative technology is selected, companies face the prospect of paying twice -- initially for the use of an innovative technology and later, for a less efficient or more costly traditional technology if the first attempt is not successful. The Coalition recommends the following changes.

TECHNOLOGY EXAMPLE — *Technology for Technology's Sake*

At an Ohio Superfund site the EPA selected excavation and incineration of waste and issued a ROD. The site in located in a residential community with a school across the street. The waste at this site is on top of a hill substantially above the water table and is covered with 18 feet of uncontaminated debris. Excavation of the waste would have exposed the community to airborne waste emissions and contaminated particulates in addition to noise and disruptive traffic. This remedy would have increased the short term risk substantially with little or no decrease in the long term risk. Both the community and the PRP recognized this and protested. A new ROD has now been issued with a more acceptable containment remedy.

1. Create a technology certification process and clearinghouse to evaluate technologies by established protocols.

The Coalition on Superfund recommends establishing a program to assist EPA project officers in selecting technologies based on evaluated proof of capability. The program would test capabilities by established protocols and a detailed analysis would be provided. This program could be put into place by the creation of a Technology Certification and Clearinghouse provision in the law. This provision would require:

- Protocols for testing technologies based on the types of pollutants and conditions discovered at Superfund sites;
- A method to train and certify facilities to run the protocols;
- Testing all technologies proposed for use at sites;
- Storing results of these tests in a central clearinghouse where they can be accessed by the general public through a variety of methods including online computer searches; and
- Making these test results available to the local community, the state, other political entities and the potentially responsible parties (PRPs) at any site during the development of a Record of Decision.

Such activities should be encouraged to demonstrate that the use of effective innovative technologies can and should be selected over less effective and/or more costly traditional remedies. Alternatively, this program could be used to illustrate when more costly traditional remedies are ineffective.

2. Provide credit for the demonstration of innovative technology capabilities.

A PRP should not be penalized when required to use traditional methods following an attempt to remediate a site by use of innovative technologies. Too often innovative technologies are not used due to fear that if the technology proves to be unsuccessful, a PRP will be forced to "pay twice," i.e., once for the innovative technology and again for the use of a traditional method if the innovative technology fails. To avoid the prospect of a double payment when a PRP conducts full-scale field testing of an innovative technology at a site, a credit should be provided to the PRP for the costs of the innovative technology.

Summary — Taken together these changes offer the opportunity to improve the current remediation process by making it move more quickly, more efficiently, more effectively, and more equitably.

Superfund has never met public or Congressional expectations. It is widely viewed as a broken program. But, its failures do not result from a lack of political will or solely from poor administration of the program. Rather, its failures result from conflicting goals and from fundamental flaws in key elements of the law. Congress has the opportunity to comprehensively review and reform the Superfund law. It has the opportunity to step toward the development of a program that will meet the broad public desire for environmentally sound, just and expeditious remediation of waste sites.

These hearings address one of the key elements of the Superfund program — remedy selection. Changes to the current remedy selection process are essential. But, changes to the process will ultimately be judged on whether sites are remediated more quickly and with more public acceptance than they are now. Pace and acceptability cannot be improved without addressing other key elements of the law — liability, funding, and program administration.

The Coalition on Superfund believes that a thorough review of the law and program is essential with reform based on the results of such an effort. The Coalition is committed to being a constructive part of that process.

United States General Accounting Office

GAO

Testimony

Before the Subcommittee on Superfund, Recycling, and Solid Waste Management,
Committee on Environment and Public Works,
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SUPERFUND

Risk Assessment Process and Issues

Statement for the Record of Richard L. Hembra
Director, Environmental Protection Issues,
Resources, Community, and Economic Development Division

GAO/T-RCED-93-74

Mr. Chairman and Members of the Subcommittee:

As the Subcommittee considers Superfund reauthorization issues, we are pleased to provide this statement for the record on the Environmental Protection Agency's (EPA) process for assessing risk at Superfund hazardous waste sites. Risk assessments provide key information that affects EPA's management of current and future site risks, including decisions on whether and how to clean up sites. These considerations are particularly important because of the choices EPA must make about cleanup priorities in view of the high cost of hazardous waste cleanups. At your request, our statement focuses on EPA's process for assessing the risks to human health posed by Superfund sites and questions that have been raised concerning some of the assumptions and calculations used in these risk assessments.

In summary, the Superfund risk assessment process has three key steps: (1) the exposure assessment, which evaluates whether people at or near sites may be at risk from the contaminants present; (2) the toxicity assessment, which determines whether these contaminants could have harmful effects on human health at the levels present at the site; and (3) the risk characterization, which uses information from the exposure and toxicity assessments to estimate the likelihood that individuals at or near the site could develop cancer or other health problems. Our work to date has shown that for all three steps in the process, scientific

uncertainties and data gaps persist in spite of the enormous quantity of data that EPA gathers about each site.

First, the major exposure uncertainty that EPA must deal with is to gauge how the site's land will possibly be used in the future. That is, if people reside on a site, they will be much more exposed than if they merely work on it. Because EPA cannot with certainty know or control the land's future usage, it has made a policy decision to project a future residential use, unless there is substantial evidence to the contrary. This decision to err on the side of conservatism has been strenuously questioned, especially by the responsible parties who must pay for the cleanups.

Second, EPA's toxicity assessments must rely in large part on available data from animal experiments because experiments on human beings are rarely ethically permissible. Use of the animal data involves extrapolation from animals to human beings and from the high experimental doses given to animals to the low doses present at sites. Data extrapolation is a scientifically uncertain process and therefore controversial. Additionally, some critics have questioned EPA's policies for extrapolating data on carcinogens and noncarcinogens. These policies are designed to provide for an extra margin of safety in the face of scientific uncertainties.

Third, EPA's process for characterizing site risk involves combining the potential exposure to contaminants with data on their toxicity. Criticisms of EPA's risk characterization have focused on (1) how risk assessments should account for uncertainty and variability in site data and (2) whether Superfund's resultant risk formula overstates risk by combining conservative estimates.

Before we begin a more detailed discussion of EPA's risk assessment process, let us provide you with some background information on where risk assessment fits in the overall Superfund cleanup process.

BACKGROUND

Under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, or Superfund), EPA evaluates hazardous waste sites and places those having the highest potential human health or environmental risk on the National Priorities List (NPL). Superfund also established a cleanup process for NPL sites, which includes studying and analyzing them to determine if they warrant cleanup, developing an array of potential cleanup remedies, selecting specific remedies, and designing and constructing the cleanup remedies. The law established a fund for cleaning up these priority sites and gave EPA the authority to compel parties responsible for these sites to help conduct or pay for cleanup. In 1986, the Superfund Amendments and Reauthorization Act (SARA) set

new requirements for selecting cleanup remedies. In 1990, the Congress reauthorized CERCLA through 1994, bringing its total authorizations to $15.2 billion, without making any substantive changes to the program.

To determine whether contaminated sites threaten human health and/or the environment, EPA evaluates potential risk at several points in the Superfund cleanup process. EPA conducts preliminary assessments and site investigations of sites to identify those that may be serious enough to list on the NPL and to screen out those that are less serious. EPA uses a Hazard Ranking System to assess the hazard associated with a site and places those sites with relatively high scores on the NPL. Once a site has been placed on the NPL, a number of steps take place before actual cleanup activities begin. These steps include a comprehensive site study to analyze site contamination and develop potential cleanup remedies, a formal site cleanup plan, an engineering design for the selected remedies, and construction of the cleanup remedies. EPA can also perform an emergency removal action at any time to respond to situations that immediately threaten human health or the environment, without following all of these steps.

The formal baseline risk assessment, the focus of today's testimony, is part of the comprehensive site study in which the site is analyzed and the potential cleanup remedies are developed. The purpose of the assessment is to estimate the likelihood that

human health and/or the environment will be harmed as a result of exposure to contaminants at the site if no cleanup takes place. EPA will generally take cleanup action if the estimated risk of developing cancer from exposure to the site's contaminants is greater than one in 10,000 or, for noncarcinogenic contaminants, if an individual could be exposed to a potentially harmful dose.

EPA's regions are responsible either for making baseline risk assessments or for overseeing those performed by potentially responsible parties. Science direction comes from EPA's Office of Research and Development (ORD), while policy direction comes from the Office of Solid Waste and Emergency Response. ORD provides general risk assessment guidance for all of EPA's programs and also maintains a data base on the toxicity of environmental contaminants.

EPA distinguishes between risk assessment--in which risk is estimated--and risk management--in which the agency decides whether and how to conduct a site cleanup. The regulations implementing CERCLA require that EPA, in selecting a cleanup remedy, also consider such factors as whether the remedy (1) is cost-effective; (2) reduces the contaminants' toxicity, mobility, or volume; (3) is effective in the short term; and (4) is satisfactory to the state and the community.

With this perspective, we would now like to discuss the three steps in the risk assessment process and some of the most pressing scientific and policy issues.

ASSESSING THE EXTENT OF EXPOSURE TO CONTAMINANTS

The goal of the exposure assessment is to determine whether people in the community may come into contact with contaminants through a number of possible exposure "pathways."[1] To identify and evaluate these pathways, risk assessors gather information about how people currently use the site and nearby areas. For example, if an open field is contaminated, EPA may ask local officials whether children play there. EPA also considers activities that may occur in the future, for example, whether the site may later be developed for homes or a school.

EPA Policies on Land Use

The assumption about how the site and surrounding land will be used in the future is probably the most important decision in the exposure assessment. EPA generally assumes that residential use of land is possible in the future, unless there is substantial evidence to the contrary. Although the current use of most

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[1]Potential pathways include ingesting contaminated groundwater, surface water, or soil; eating fish from contaminated water or home-grown produce from contaminated soil; absorbing contaminants through direct contact with the skin; and breathing contaminated air.

Superfund sites can be readily classified as residential, industrial, or recreational, those involved in the Superfund process disagree about how sites may be used in the future. Future land use affects assumptions about how frequently and in what manner people may potentially be exposed to site contaminants. For example, under a residential-use scenario, EPA might assume that children and adults breathe contaminated air 24 hours per day year-round, while an industrial-use scenario might assume that adult workers are exposed for 8 hours per day for 250 days per year. The differences in these exposure assumptions could affect the risk calculation significantly enough to change the risk manager's choice of a remedy.

Some responsible parties and representatives of industry groups whom we interviewed contend that some EPA risk assessments that assume future residential use of currently industrial sites exaggerate the risks at these sites. EPA officials offered several reasons for making such an assumption. First, EPA officials believe that SARA requires a conservative approach to protecting human health and the environment because of the law's preference for permanence and for treatment to the maximum extent practicable. Second, because EPA cannot directly control land use once a Superfund site has been cleaned up, it believes the residential-use scenario is most protective.

State and local governments often seek to influence EPA's land-use decisions. To avoid having to pay for long-term operations and maintenance, states often push EPA to adopt a residential-use scenario with its more stringent cleanup standards, according to EPA regional staff. Communities sometimes advocate more or less stringent cleanups because they may perceive the selected remedy as not providing a sufficient level of permanence or as having dangerous side effects.

To illustrate the effect that land-use assumptions can have on risk characterization, we reviewed a metal-treating site in Michigan. Metals and organic contaminants leaked into a shallow groundwater aquifer from the adjacent facility. The surrounding land use is currently mixed, and the contaminated aquifer is too shallow to be used for drinking water. Responding to state concerns, EPA assumed a future residential-use scenario, under which it determined that the site posed a future risk driven mainly by drinking the groundwater. However, EPA also considered an alternative, industrial-use scenario, under which it concluded that no significant risks existed at the site. EPA has recently decided to use the future industrial-use scenario and concluded that no cleanup actions, beyond groundwater monitoring and deed restrictions, are necessary. The state opposes EPA's decision. We have not reviewed this site sufficiently to determine the appropriateness of EPA's decision.

EPA's Use of Site-Specific Data and Standardized Assumptions

In addition to future land use projections, the other key question involves the extent to which exposure estimates are based on site-specific observations versus standardized assumptions. EPA encourages the collection of site-specific data and believes these data can improve the assessment of current risks. For example, at a landfill located in a state park in Illinois, the responsible party collected site-specific data that considerably changed the exposure assumptions that would have been used in the risk assessment. A survey of park employees and visitors showed that, contrary to the original assumptions, a portion of the population regularly caught and ate fish from a pond on-site. The survey also showed that parts of the park assumed to be in frequent use were, in fact, seldom used.

Unfortunately, it is difficult to gather site-specific data on many potential sources of exposure. Measurements of actual human exposure can be difficult, time-consuming, and expensive to collect. Also, the science has not yet advanced enough to (1) detect all contaminants and (2) determine whether those contaminants present in body tissues can be traced back to a specific source. Additionally, surveys of local residents may help describe current site use, but not future use, and not all community members may agree to participate. Furthermore, the Paperwork Reduction Act requires that any federal agency's survey

of 10 or more nonfederal persons or entities be reviewed and approved by the Office of Management and Budget, a potentially lengthy process that may delay the risk assessment and site cleanup.

Instead, EPA uses standardized exposure assumptions to describe how people might come into contact with site contaminants. EPA frequently relies on national studies to provide information on factors needed to complete the exposure assessment, such as the volume of water consumed daily and the length of time that people typically live in one residence. However, the resultant standardized exposure values used may over- or understate actual local exposure, thus raising uncertainty about the risk assessment's results.

EPA has been criticized for not adequately modifying such standardized assumptions by taking into account site-specific conditions. Responsible party representatives report that such standardized exposure assumptions overstate site risk. For example, they believe that lowering the number of days that individuals will come into contact with soil in a northern latitude from an assumed 365 days to a number that more appropriately reflects the local climate and annual snow days, would result in a more accurate exposure assessment. However, replacing the hundreds of exposure assumptions that go into a complex risk assessment has the potential to further delay the Superfund cleanup process. EPA

officials said that unless the data significantly differ from the standardized assumptions, the effort may not be worthwhile.

ASSESSING THE HAZARDS OF CONTAMINANTS PRESENT

To determine how and whether hazardous contaminants present may affect the health of people at or near a site, EPA conducts a toxicity assessment. Because data on the actual human health effects of contaminants are often not available, EPA uses available data from animal experiments. To use the animal data, EPA must extrapolate in two different ways--from animals to human beings and from the high experimental doses given to animals to the low doses present at Superfund sites. Data extrapolation is a scientifically uncertain process and therefore controversial. EPA has developed specific policies for extrapolating data on carcinogens and noncarcinogens to provide for an extra margin of safety in the face of scientific uncertainties.

Extrapolation From High Doses Given to Animals to Low Doses for Human Beings

Data on the human health responses to contaminants are scarce; therefore, EPA's toxicity assessment depends upon data extrapolations that have raised several difficult scientific and policy questions. Two major questions concern extrapolations from animals to human beings and from high experimental doses to the low doses found at sites.

First, EPA generally relies on animals for toxicity data, because experiments on human beings are only rarely ethically permissible. Even if the animal experiments are done well, an extrapolation from animals to human beings is needed to understand the experiments' possible relevance to human health. The major concern centers on whether contaminants that have been shown to cause carcinogenic or other adverse health effects in experimental animals also cause comparable effects in human beings.

Second, use of data from animal experiments involves extrapolation from the high doses given to experimental animals to the relatively low doses found at Superfund sites. Uncertainty exists about whether a particular contaminant will have the same adverse effect at low doses, and for many contaminants it is unknown whether a dose threshold exists below which no carcinogenic effects would be expected. Superfund critics contend that although the use of excessively high doses in animal studies leads to cancer in animals, such studies are not relevant to human beings who are likely to be exposed at lower levels.

Compensating for Uncertainty in Data About Carcinogens and Noncarcinogens

To respond to the need to extrapolate from existing toxicity data, EPA has developed specific policies for both carcinogens and noncarcinogens. EPA's policy for all of its programs assumes that any amount of exposure to a carcinogen carries some risk of

developing cancer. As a result, some critics have stated that Superfund risk assessments are overstated because they are primarily driven by the relative carcinogenicity of site contaminants. However, others contend that this focus on carcinogens may understate overall risks at some sites because other kinds of adverse health effects, such as breathing problems, skin rashes, and birth defects, may be given insufficient weight.

For noncarcinogens, EPA's policy is to adjust the toxicity values derived from animal studies to provide an extra margin of safety. EPA multiplies the estimated toxicity value by 10 for each uncertain aspect. For example, EPA increases the toxicity of toluene measured in animal studies by 1,000 to adjust for three uncertainties: the differences between rats and humans, the need to generalize long-term effects from short-term study results, and the limited data on toluene's toxicity to reproductive systems and to fetal development. EPA recognizes that the risk may be overstated, partly as a result of this policy, but believes that it is important that the agency not underestimate risk to help ensure that its decisions protect human health.

CHARACTERIZING THE LIKELIHOOD THAT HEALTH PROBLEMS WILL OCCUR

The final step in EPA's risk assessment process entails characterizing the risks of adverse health effects likely to occur now or in the future if no cleanup actions take place. EPA

combines individuals' estimated exposure to each contaminant with each contaminant's estimated toxicity, summing the results for those exposed to more than one contaminant or to contaminants from a variety of sources. (For example, an individual near a site might both drink contaminated water and inhale contaminated air.) The end result is an estimate of total site risk that will vary, depending upon the exposure scenarios used.

Because many of the exposure and toxicity factors used to characterize risks are inherently uncertain and variable, responsible parties have criticized the accuracy of EPA's risk assessments.[2] In particular, these criticisms have focused on two issues: (1) how EPA should account for uncertainty and variability in its risk assessments and (2) whether EPA's resultant risk formula overstates risk by combining high-end estimates together.

Data Uncertainty and Variability

EPA generally uses single values for exposure and toxicity when calculating risk, despite the uncertainty and variability in

[2]Uncertainty is introduced into risk assessments when a factor--for example, the amount of soil that adults typically ingest each day--cannot be accurately measured. Variability is introduced when a factor--for example, the amount of contamination in the air--can be measured but tends to change over time. Consequently, factors commonly used in risk assessments, such as the concentration of a contaminant in soil at the site, the number of years people live in one residence, and the amount of soil ingested per day, can all be expressed as a range of values with an average, a high, and a low.

these data. While this practice simplifies the process of risk characterization, it has resulted in criticism from both the scientific community and responsible parties that risk assessments suffer from false precision because they present a single risk number based on highly uncertain data.

EPA's Science Advisory Board has advocated using techniques, such as Monte Carlo simulation,[3] that explicitly include uncertainty, and Superfund risk assessment guidance recognizes Monte Carlo simulation as a method for uncertainty analysis. However, such approaches have seldom been used in Superfund risk assessments because, according to EPA officials, (1) the required data ranges, such as the amount of soil that adults typically swallow each day, are often unavailable and (2) most Superfund staff do not have the training to conduct or evaluate Monte Carlo analyses.

In addition to Monte Carlo analysis, risk analysis experts and statisticians whom we interviewed suggested that sensitivity analysis might be another useful tool for describing and attempting to quantify the magnitude and effect of data uncertainty and variability on the risk assessment's results. Sensitivity analysis involves varying important factors of the risk assessment equation

[3]Monte Carlo simulation estimates potential risk by repeatedly selecting random values from data distributions for each of the risk assessment factors in order to come up with a statistical distribution of site risk.

one at a time to determine if the variability has a substantial impact on the outcome. For example, if the risk assessor was uncertain about future land uses for a site, several scenarios could be calculated and compared to determine the effects of the land-use decision.

Combining High-End Values

As previously noted, Superfund sites can present the risk assessor with information on many contaminants, possible exposure scenarios, and sources of scientific uncertainty. EPA characterizes risk for each contaminant by combining the exposure estimates, which sometimes have been increased to account for uncertainty. A recent report by an industry group criticized EPA for this practice of characterizing site risks. In its view, combining overestimates of exposure and toxicity "exaggerates" the risk.[4]

Our review showed that Superfund's current guidance on exposure assessments requires using central, or average, values for many factors, with high-end values being used only for the most variable factors. For example, the contaminant concentration and body weight factors used in the standard exposure assessment are average values. However, factors describing human behavior, such

[4]Exaggerating Risk: How EPA's Risk Assessments Distort the Facts at Superfund Sites Throughout the United States (Hazardous Waste Cleanup Project, June 1993).

as length of residence at the site and the amount of water consumed per day, are high-end values. The use of such an approach would result in a conservative, but not extreme, description of potential exposure; however, we did not evaluate the extent to which EPA adheres to this guidance.

SUMMARY

Risk assessments are integral to EPA's attempts to balance competing Superfund program goals of cleaning up as many hazardous waste sites as possible while trying to ensure effective cleanups. However, as we have noted, characterizing risks at Superfund sites is, perhaps, one of the most difficult tasks that EPA undertakes. EPA must deal with unpredictable patterns of human behavior that affect the way individuals and communities are exposed to hazardous wastes, as well as with the scientific uncertainty about the extent to which contaminants adversely affect human health. In addition, risk assessments require an accurate knowledge of the type of contaminants present at a site and procedures for quantifying how these contaminants might interact under a variety of scenarios.

Although more research and data may yield improvements, it is impossible to remove all imprecision from the risk assessment process. EPA's solution has been to rely on models and assumptions about the way individuals come into contact with and the danger from contaminants. In accordance with its interpretation of the

statute, EPA also has made a policy decision to err on the side of caution. It has determined that future as well as current risks should be considered and that, whenever in doubt, its assessments should overestimate rather than underestimate risk.

EPA's policy decision has led to a number of criticisms, especially from those industrial parties responsible for cleanups. Most critics have focused on EPA's procedures for dealing with scientific uncertainty and the assumptions---particularly about future land use--made in the absence of better site-specific data.

national ground water association

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September 30, 1993

The Honorable Frank Lautenberg
Chairman
Subcommittee on Superfund, Recycling
and Solid Waste Management
505 Hart Senate Office Bldg.
Washington, D.C. 20510

Dear Senator Lautenberg:

On behalf of the National Ground Water Association (NGWA), I want to commend the Subcommittee for holding this hearing on the Superfund cleanup process and innovative cleanup technologies.

The National Ground Water Association is a nonprofit trade and professional society. Among our more than 24,000 members are some of the country's leading ground water scientists and engineers, ground water contractors and equipment manufacturers and suppliers. We appreciate this opportunity to express the views of the Association to the Subcommittee and would request that this letter be included as part of the hearing record.

NGWA members serve in a wide variety of roles at ground water remediation sites. They may be federal or state regulators providing oversight or consultants advising clients/regulators on the contamination's extent and cleanup alternatives. In some cases, they are the contractors involved in a pump and treat remediation system, or they install wells used to test the ground water. In these capacities, our members have become aware that sometimes present technical limitations do not match public expectations of cleanup.

The experience of our members in ground water remediation includes, but extends beyond the Superfund program. It also includes much interesting and relevant work performed in other countries. The information gained is disseminated by NGWA through a variety of conferences, short courses and technical publications.

As your Subcommittee continues its discussion of the use of innovative technology, you may wish to be aware that the technical community and others are searching for better ways to remediate ground water contamination. NGWA has organized, along with its co-sponsors, the "Forum on Remediation of Ground Water Contamination." The forum is scheduled for February 2-4, 1994 in Denver, Colorado. The forum's purpose is to identify the primary issues of ground water remediation and highlight both the problems and solutions. The Association would be pleased to share the proceedings of the conference with the Subcommittee as a way to enhance the general level of information regarding innovative cleanup technology as the Senate considers reauthorization of the Superfund program.

Also, as a matter of information, attached is a bibliography generated through the use of our Ground Water On-Line data base. The bibliography contains abstracts of recent articles on Superfund and innovative technology. The data base contains 70,000 citations on ground water-related articles.

Again, the Association stands ready to continue to work with the Congress in the future to provide you with the best possible scientific and technical information about aspects of the Superfund program on which our membership has expertise.

Very truly yours,

David Schmitt

David Schmitt
Executive Director

[Note: An attachment to this letter has been retained in committee files.]

TESTIMONY FOR THE RECORD

of

Kenneth Olden

Director

National Institute of Environmental Health Sciences

National Institutes of Health

for

United States Senate
Subcommittee on Superfund, Recycling and Solid Waste Management
Committee on Environment and Public Works

30 September 1993

The National Institute of Environmental Health Sciences (NIEHS) is pleased to present testimony for the record on the NIEHS Superfund Basic Research Program projects involving environmental technologies.

Background

The effect of uncontrolled hazardous waste on human health is one of the most significant public health concerns of the decade. Large numbers of people may be exposed to chemicals known to have or suspected of having effects on reproduction and development, the immune and nervous systems, or which may cause cancer. The need for research in dealing with toxic waste is clear. There are critical gaps in our knowledge about its effects on human health and on how to mitigate these effects through better containment or destruction.

The Congress recognized that the science base is inadequate and in the Superfund Amendments and Reauthorization Act of 1986 (SARA) established a university-based multidisciplinary basic research program at NIEHS to be funded with monies from the Superfund Trust. In responding to the legislation, NIEHS initiated a research program calling for the integration of the biomedical, engineering, ecological, and geosciences in a multiproject, multidisciplinary effort to bring together a broad spectrum of scientists to approach the problems of toxic waste in a coordinated and comprehensive way. It is this kind of innovative approach that shows great promise for providing answers to the questions most often heard from people whose environment has been affected by uncontrolled hazardous substances: "What are the risks to me and my family and what can science and technology do to help us?"

The NIEHS Superfund Basic Research Program should be thought of as a prevention program directed towards understanding, assessing, and attenuating the adverse effects on human health resulting from exposure to hazardous substances; therefore, NIEHS has as one of its mandates under SARA to develop biological, chemical, and physical methods to reduce the amount and toxicity of hazardous substances in the environment. It is important to recognize that the clean up of contaminated soil, sediment and groundwater is not only for improvement of the environment, but is also a means by which human exposure and human health risks can be reduced. To this end the NIEHS Superfund Research Program has been supporting basic and applied research in environmental technologies integrated within a framework of health-related research and development.

The NIEHS currently funds 18 multidisciplinary grants involving over 1000 scientists at 29 institutions working on 142 research projects that are providing an increased understanding of the health and environmental effects associated with Superfund sites and new technologies to monitor exposures and to reduce exposures through improved containment and destruction of waste site toxic chemicals. No other agency supports this kind of multidisciplinary program.

Current Research on Environmental Technologies

Waste Site Remediation: Engineers at the University of California-Berkeley have developed a steam injection technology to remove solvents and liquid fuels from soils contaminated by leaking underground storage tanks or spills on the surface. In this method, steam injection wells are located around the perimeter of a contaminant plume. Steam is injected into these perimeter wells and a vacuum extraction well located at the center of the plume removes the contaminant/steam mixture. Laboratory and small scale tests of the technology were promising enough to convince the Department of Energy Office of Environmental Restoration and Waste Management to invest $12,200,000 in a demonstration facility to clean up a twenty year old gasoline spill at Lawrence Livermore National Laboratory. After earlier cleanup efforts, approximately 6700 gallons were estimated to remain in the subsurface. The technology proved to be so successful that over 7000 gallons of gasoline have been recovered and sent to a recycler for resale. Gasoline recovery rates were 60 times greater than those obtained by ambient temperature soil vapor extraction and groundwater pumping. This technology is being considered for the cleanup of a carbon tetrachloride spill in fractured basalt at the Idaho National Engineering Laboratory, is to be applied to a jet fuel spill at the Lemore, California, Naval Air Station, and is a key technology being considered for rapidly closing the Alameda, California, Naval Air Station.

The importance of this program is that there is now a proven technology that can be used to remove volatile solvents, some of them carcinogenic (e.g., benzene), from the subsurface before they reach groundwater resources. Not only are storage tanks at gas stations sources of contaminants in groundwater resources, but pipelines that transport gasoline from southwestern states nationwide are major sources of hydrocarbon contaminants in the subsurface. Many of these pipelines are over 50 years old and are constructed from steel which corrodes and leaks.

Biodegradation of Azo-dyes: Scientists and Engineers at the University of Cincinnati have isolated and engineered novel strains of bacteria that aerobically degrade a number of azo-dyes which have been linked with bladder cancer in humans. The goal is to reduce the bioavailability and toxicity of these particularly troublesome wastes, thereby providing a more cost-effective approach to controlling them at the source. As a result of the success of this program with organic compounds such as the azo compounds, the researchers are developing a collaborative research effort with the U.S. Ecological and Toxicological Association of Dyes and Organic Pigments Manufacturers to assess the bioavailability and toxicity of metal-complexed dye wastes. This research will provide more accurate data from which to make better management decisions relating to the control of all types of dye waste discharges.

Biodegradation of organic chemicals: Investigators at Utah State University have developed a biodegradation technology for organic chemicals based on the discovery that the white rot fungi that degrade lignin in wood can also degrade a wide variety of otherwise

very recalcitrant, toxic environmental pollutants, such as DDT, 2,4,5-T, TNT, pentachlorophenol, creosote, coal tar, dioxin, PCBs, and heavy fuel oils. Many of these chemicals both singly and in mixtures are completely mineralized, i.e., converted to carbon dioxide and water. The process works in soil. Preliminary evidence shows that it should work in water, thus making it a technology that can be applied to both ground and surface water resources.

Biodegradation of Volatile Organic Compounds (VOCs): Research at Michigan State University/University of Michigan focuses on soil, groundwater and surface water contamination from industrial waste sites. It includes studies on the ability of microorganisms to degrade pollutants in soil and water and uses genetic engineering techniques to assess, understand and improve the degradative capacity of selected microorganisms. In addition to research on biodegradation, research is being carried out on the use of chemically modified clays that enhance retention of contaminants in soils thus retarding their movement and allowing sufficient time for biodegradation to take place.

Transformation of Metals by Bacteria: Scientists at New York University isolated bacteria that can transform chromium from Cr(+6) to Cr(+3), thus reducing the toxicity of this element. At Cornell University, scientists have modified bacteria to enhance their ability to accumulate mercury and cadmium. Because metals such as mercury, cadmium and chromium are common toxic waste site metals, their removal by bacteria in biofilm reactors from waste site leachates represents an effective method of reducing possible human exposure via drinking water or consumption of contaminated fish.

Supercritical Extraction/Wet Oxidation: Engineers at Syracuse University are assessing the technical feasibility of supercritical extraction/wet oxidation processes to remove and destroy halogenated aromatic hydrocarbons from contaminated soils removed from waste landfill sites. The advantages of the supercritical process over conventional waste treatment methods include enhanced solubility of organic chemicals in water, their complete oxidation, simplicity of separation of pollutants from the waste stream, and reduced energy costs. Treated soil is decontaminated after processing. Because of the lower temperatures at which it operates the reactor does not promote the formation of NOx or other toxic byproducts. With funding from both NIEHS and the Niagara Mohawk Power Corporation, the researchers plan to develop this technology from a laboratory device to a bench-scale apparatus with a goal of demonstrating the effectiveness of this technology at existing PCB-contaminated waste sites owned by Niagara Mohawk.

Incineration: Eliminating toxic chemical by-products produced during the incineration of waste chemicals is an especially difficult problem because of the inability to detect them while they are being formed. An investigator at the University of California-Berkeley has developed a new photofragmentation/laser-induced fluorescent technique to measure chlorinated hydrocarbons at atmospheric pressure at both ambient and combustion temperatures. This technique has the potential to act as a real-time monitor for observing formation of toxic chemicals during combustion. It may allow for much better and more

cost-effective monitoring of destruction efficiencies and by-product emissions from incinerators. If fully successful, this will be the first real-time monitor to detect and identify design and operating conditions that promote the formation of toxic by-product chemicals during the incineration of hazardous wastes. This technological advance may also have applications in reducing exhaust emissions from automobiles and fossil fuel electrical power plants. The ability to detect the formation of toxic by-products of combustion, such as hydrocarbons, during the combustion process may make it possible to relate formation processes for these pollutants directly to chamber design and operating conditions. With this information, design and operating conditions of automobile engines and combustion chambers can be modified to minimize formation of air pollutants and reduce exhaust emissions without reduced efficiency in energy conversion.

Sequestration of Waste by Clay Minerals: Investigators at Michigan State University have developed modified clay minerals that enhance the sorptive capacities of clay minerals for organic groundwater contaminants. The enhanced ability to contain contaminant plumes and slow their movement in the subsurface is an important component in in situ bioremediation of waste sites. Retarding and inhibiting transport of groundwater contaminants may allow sufficient time for microorganisms to degrade and mineralize organic chemicals found in toxic waste sites.

Transport of VOCs and NAPLs: A scientist at Michigan State University is using laboratory column experiments to identify the factors that control the transport of volatile organic compounds (VOCs) and nonaqueous phase liquids (NAPLs) in the unsaturated zone of the subsurface where most waste site and liquid fuel storage tanks have been located. She is developing mathematical models that simulate and predict the transport of these compounds in a wide variety of soils. The importance of this work is that it may help to explain how interactions between contaminant chemicals and the porous structures of the subsurface affect rates of contaminant movement in groundwater. Before effective long-term waste site remediation methods can be developed and implemented, interactions and processes occurring in the subsurface that control the rates of transport of contaminant VOCs and entrapped NAPLs must be determined and quantified.

Biomarkers for Exposure and Effect: In determining human health risks, data on exposure to waste site chemicals are essential. Teams of researchers at UC-Davis, UC-Berkeley, MIT Rutgers, New York University, and the University of Washington have developed a number of enzyme-linked immunosorbent assays (ELISAs) to detect and quantify exposure to waste site chemicals in humans and other species. One example is the development of an immunoassay for the detection of the herbicide atrazine (The triazine herbicides are good indicators of agricultural chemical contamination of groundwater resources.) with a detection limit of 10 parts per trillion. The assay has been used to detect the presence of atrazine in fog water, demonstrating a new route by which contaminants can move from a point source to expose a wide area, and also to monitor an herbicide spill. Another example is the development of a quick and sensitive method for detecting DNA-protein crosslinks as a biomarker of exposure to toxic substances, such as formaldehyde and

chromate. Using previous methods, it took three days to perform 20 analyses; using this new technique, several hundred can be finished in a few hours with similar levels of sensitivity.

ELISAs are especially useful, because they are rapid, reliable, and inexpensive. They can be used to detect exposure to toxic chemicals in readily available biological tissues, e.g. blood and urine, and can be used to detect the presence of toxic chemicals in environmental samples, e.g., contaminated ground and surface water. They make it possible to rapidly determine the presence of toxic pollutants in the field. Such a field detection capability is an important component of monitoring networks needed to determine the location of pollutants and of waste site remediation. In addition, because of their simple design, ELISAs can be used successfully by people who are not experienced technicians. (Home pregnancy test kits are a commercial example of this technology.)

Environmental Technology Transfer

It is vital to the success of this program, as well as to the advancement of the science of hazardous waste management, to disseminate and utilize the knowledge gained from this research. To accomplish this task, NIEHS has implemented a technology transfer strategy to disseminate nonproprietary programmatic and research information and to provide additional funds to assist grantees in going from basic to applied or scale-up research, as well as to provide a resource of contacts within the environmental science field to connect grantees with potential research collaborators in other government agencies, universities, and industries.

Conclusion

The information on health effects and the environmental technologies developed by the NIEHS Superfund Research Program offer great promise for reducing public concern about hazardous waste sites, including those for which the federal government is responsible. The economic value in terms of job creation, competitive technologies for export, and cleanup money saved for federal, state, and local governments and the private sector is obvious.

NIEHS would be pleased to answer any questions regarding our Superfund Basic Research Program.

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New Hampshire
SUPERFUND
Task Force
Final Report

August 20, 1993

★★★★★★★★★★★★★★★★★★

Congressman William H. Zeliff, Jr.
First District, New Hampshire

[Excerpts from the above-named report follows.]

INTRODUCTION

In June 1992, Congressman William H. Zeliff, Jr. (R-NH, 1st Dist.) organized a New Hampshire Task Force to address problems with the Superfund law (the Comprehensive Environmental Response, Compensation and Liability Act or "CERCLA", 42 U.S.C. § 9601 et seq.). Known as the "New Hampshire Superfund Task Force", the group was charged with reviewing CERCLA and its implementation in New Hampshire with an eye toward making recommendations for ways in which the program could be improved through legislative and administrative changes.

The twenty-seven Task Force members, all of whom are listed in the cover letter to this Report, represent a broad cross-section of parties interested in or affected by CERCLA, including municipalities, small and large businesses, lending institutions, environmental groups, environmental consultants and attorneys. Brief biographical descriptions of Task Force members are included in Appendix A.

One of Congressman Zeliff's goals in creating a task force having diverse representation was to foster efforts by parties with presumably divergent interests to reach consensus. The activities of the Task Force were structured to encourage the sharing of information and ideas with a goal of building consensus wherever possible.

The Task Force benefited from the assistance of both the State of New Hampshire and the United States Environmental Protection Agency, Region I. Participating state and federal officials are identified in Appendix B. The state and federal environmental officials served in an advisory capacity to the Task Force. They provided the Task Force with information about and insight into the existing Superfund program, and made themselves available to answer questions. In addition, the New Hampshire Office of State Planning helped coordinate and facilitate Task Force activities. The Task Force appreciates the time dedicated by both state and federal officials in assisting the Task Force in its efforts and the willingness at both the federal and state levels to listen and consider proposed changes to the Superfund program. The participation of the state and federal Superfund officials in the process does not indicate, and was not intended to indicate, that either the State of New Hampshire or the federal government endorses the changes recommended by the Task Force in this Report.

At its initial meeting on Monday, July 27, 1992, the Task Force identified a total of more than twenty issues or principles that members felt should be considered. The issues and principles identified at the initial meeting were then organized into four categories (remediation, process, liability and economic impacts), and Task Force members were assigned to subcommittees to prepare brief summaries of each of the issues. With respect to liability issues, the Task Force chose to focus on those issues as they affect all parties rather than certain subgroups, such as municipalities.

At a subsequent meeting, each of the brief summaries was presented and discussed by the full Task Force. Certain issues had been addressed by more than one subcommittee, and those topics were more clearly defined and assigned to one specific subcommittee for the purpose of reducing duplication of effort. A fundamental strategic decision was also made at that time. Three subcommittees, namely those charged with addressing liability, process and remediation issues, were directed to proceed from the assumption that the basic framework of the Superfund law would remain intact, and that their recommendations for changes to the law should be structured with the goal of

making the existing program work better rather than creating an entirely new approach. A decision was also made to reconstitute the subcommittee on economic impacts as an "alternative futures subcommittee" which was directed to start from the premise that there would be an opportunity to take an entirely fresh approach to the problem of hazardous waste site cleanups. The alternative future subcommittee was asked to review various known proposals for substantial reform of Superfund, and to offer its own recommendations for a new approach, focusing particularly on issues of funding and liability. Provided that such a recommendation or recommendations could be reached by the alternative future subcommittee, it was also asked to suggest how a transition could be made from the existing Superfund process to the proposed alternative future scheme.

On November 30, 1992, the Task Force held an all-day work session with Don Clay, then EPA Assistant Administrator for Solid Waste and Emergency Response, and Tim Fields, the Director of EPA's Superfund Revitalization Office. In addition to touring five Superfund sites, the Task Force spent more than two hours presenting its initial findings to Don Clay and Tim Fields and hearing their views. A final portion of the program included a public forum at the Dover City Hall at which members of the public were invited to present their views for consideration by EPA and the Task Force.

Following the November 30th session, the subcommittees refined their recommendations in preparation for an all-day retreat which was held on January 25, 1993. At that time, each subcommittee presented its recommendations for consideration by the full Task Force. Each issue was discussed, and an attempt was made to reach consensus on specific recommendations. As a general matter, consensus was reached on practically all issues, although there were a few issues on which individual members expressed some concerns about certain specific recommendations.

After the all-day retreat, a draft Task Force report was prepared and circulated to all Task Force participants for comments. The draft report was also submitted to EPA officials in advance of a March 24, 1993 meeting at EPA Headquarters in Washington, D.C. During that all-day meeting, Task Force representatives presented the group's initial recommendations to a delegation of high-level representatives headed by Rich Guimond, the Acting Administrator for Solid Waste and Emergency Response; Bruce Diamond, Director of the Office of Waste Programs Enforcement, who is also chair of EPA's Superfund Reauthorization Executive Committee; and Tim Fields, Director of the Superfund Revitalization Office. All attendees are listed in an attachment to Appendix C, which is a meeting summary prepared by EPA.

From the outset, the goal of the Task Force has been to identify key issues and specific recommendations for changes, whether through administrative or legislative means. The Task Force has not, however, sought to draft proposed amendments, although in a few instances it has done so. Instead, the Task Force viewed its role as that of bringing a broad spectrum of local expertise to bear on the problem for the purpose of identifying key issues and the broad parameters of potential solutions. The Task Force must necessarily leave to legislative drafting experts employed by the Congress the job of writing amendments that would actually accomplish its specific recommendations. The Executive Summary includes a list of all the key consensus recommendations of the Task Force.

EXECUTIVE SUMMARY

Although most of the Task Force's recommendations are cast in the form of legislative amendments, some could be accomplished, at least in part, through administrative changes without further legislative enactments. However, unless legislative changes are made, there can be no guarantee that the problems identified by the Task Force will be corrected permanently. The seven points listed under the heading "Alternative Future Approaches" reflect the general thinking of Task Force Members but do not necessarily constitute consensus recommendations by the Task Force.

LIABILITY ISSUE 1 -- Release of Evidence

A. Amend CERCLA to require EPA to provide to each potentially responsible party (PRP) at the time of issuance of a Special Notice Letter or Order (or earlier if possible) the proof or evidence it has obtained which indicates that each element of liability under CERCLA is present.

B. Amend CERCLA to allow all PRPs timely access to all responses to Section 104(e) information requests submitted to EPA by PRPs.

C. Undertake a study of EPA's general approach to claiming a deliberative or "enforcement sensitive" privilege in order to determine whether there are EPA practices that should be addressed by amending the Freedom of Information Act (FOIA) to make releases of information easier by increasing access to EPA investigative or other documents that shed light on the basis for a party's liability.

LIABILITY ISSUE 2 -- Definition of Owner and Operator

A. Amend CERCLA to exempt the grantees of conservation easements from liability as an "owner" or "operator" unless they actually caused or contributed to the contamination. (Whether other limited ownership interests, such as utility easements and rights of way, should also be exempt from liability is an issue requiring further study.)

B. Amend CERCLA to specify the minimum steps that must be taken to qualify for a safe harbor exemption under the "all appropriate inquiry" standard for innocent purchasers.

C. Amend CERCLA to encourage prospective purchasers to redevelop contaminated properties by providing limited liability exemptions, limiting their liability to the increment to the land's fair market value caused by the cleanup, and granting contribution protection in exchange for some small, or at least explicitly defined payment. Authorize EPA to specify the total dollar exposure for cleanup costs of a prospective purchaser and to use Superfund monies to pay for any costs exceeding that figure.

D. Amend CERCLA to limit the liability of otherwise innocent current "owners" or "operators" to the increment to the land's fair market value caused by the cleanup.

LIABILITY ISSUE 3 -- Contribution Protection

A. Amend CERCLA to provide to all settling parties protection from not only contribution, but also cost recovery actions for matters addressed in a settlement.

LIABILITY ISSUE 4 -- Contiguous Properties

A. Amend CERCLA to exempt from liability owners and operators of properties contaminated solely due to the migration of wastes from nearby Superfund sites.

B. Amend CERCLA to authorize EPA to issue assurances of no enforcement action to owners and operators of residential, commercial and industrial properties which have become contaminated solely due to the migration of wastes from nearby Superfund sites.

C. Congress should undertake a study of lending standards under federal loan programs, including those administered by the Farmers Home Administration (FmHA) and the Department of Veterans Affairs (VA), as well as secondary market standards imposed by such entities as Ginnie Mae, to determine whether environmental risks are being assessed rationally and to ensure that loans are not being denied arbitrarily due, for example, to proximity to a hazardous waste site. Amendments to statutes other than CERCLA may be necessary to address this issue.

LIABILITY ISSUE 5 -- Lender and Fiduciary Liability

A. Amend CERCLA to adopt EPA's secured creditor rule as a statutory amendment and include liability protection for entities that purchase contaminated property from a secured creditor.

B. Amend CERCLA to provide protection of fiduciaries and trustees from personal liability in situations where the fiduciary or trustee does not stand to benefit personally from remediation of the contaminated property.

PROCESS ISSUE 1 -- Mixed Funding

A. Amend CERCLA to mandate mixed funding under specified scenarios, including broader use for orphan shares, in circumstances where the remaining PRPs lack sufficient resources to fund their allocated shares, and to facilitate reuse or redevelopment of contaminated sites. (See Liability Issue 2.)

PROCESS ISSUE 2 -- De minimis Settlements

A. Amend CERCLA to require EPA to develop and institute a prompt and efficient method of settling de minimis parties out of Superfund cases.

B. Amend CERCLA to require that all sites are considered eligible for de minimis settlement techniques. The qualifying criteria should focus on the involvement of minor parties, not on other site or PRP criteria.

C. Amend CERCLA to mandate the use of de minimis settlements at all sites where specific criteria are met.

D. Amend CERCLA to provide that the basis for eligibility for de minimis settlements, where specific criteria are not met, are determined by the PRPs involved in the site with the active assistance of EPA.

E. Amend CERCLA to require that either a complete release without any cost overrun reopeners or a release with reopeners that define the specific amount of potential additional liability is made available to all de minimis settling PRPs.

PROCESS ISSUES 3 -- Liability Allocation

A. Amend CERCLA to mandate use of or make available Alternative Dispute Resolution (ADR) techniques in the allocation process.

B. Amend CERCLA to require EPA to issue guidance documents on allocation, including municipal allocation models.

C. Amend CERCLA to require EPA to issue a non-binding allocation of responsibility (NBAR) at every site.

D. Amend CERCLA to allow judicial review to assure prompt implementation of equitable liability allocation.

PROCESS ISSUE 4 -- State Implementation Role

A. Amend CERCLA to allow greater State involvement in the National Priorities List (NPL) listing process.

B. Amend CERCLA to enlarge the State role in the remedy selection process.

C. Amend CERCLA to expand State oversight of remedial actions.

D. Amend CERCLA to allow delegation of the Superfund program to the States and provide Superfund monies to support State efforts.

E. Encourage States to be signatories to all EPA settlements.

PROCESS ISSUE 5 -- Consideration of Economic Impact in Remedy Selection

A. Amend CERCLA to require EPA to include consideration of the economic impact on PRPs in the remedy selection process and in determining whether to make mixed funding available at a site.

B. Amend CERCLA to create a mechanism for parties to pay their allocated shares over time so that they are not financially crippled by having to suffer the full impact of a lump sum settlement payment.

C. Amend CERCLA to require EPA to consider all aspects of "public welfare" (priorities and definitions) in the remedy selection process, particularly when dealing with municipal landfills at which municipalities have substantial responsibilities.

PROCESS ISSUE 6 -- Judicial Review of Liability

A. Amend CERCLA to provide a meaningful opportunity for judicial review of remedy selection and liability, and this opportunity should be available, whenever possible, before PRPs must make payments.

B. Amend CERCLA to make available to private parties a pre-enforcement hearing to determine if a Section 106 Administrative Order is arbitrary and capricious or otherwise unlawfully issued, or to determine if the private parties are liable under Section 106.

C. Where appropriate, new judicial review provisions should be related to the alternative dispute mechanisms described under Process Issue 2.

PROCESS ISSUE 7 -- EPA Oversight Costs

A. Amend CERCLA to require EPA to submit timely, periodic detailed accountings of all oversight cost charges.

B. Amend CERCLA to create an administrative appeal mechanism for addressing contested charges that is separate from the RI/FS and site cleanup process and cannot be used by EPA to slow down the final approval of deliverables.

C. Amend CERCLA to place a limitation on the amount of oversight costs that EPA can recover from private PRPs.

D. Amend CERCLA to authorize delegation of all oversight responsibilities to state regulatory agencies and provide appropriate funding to states for this purpose. (See Process Issue 4.)

REMEDIATION ISSUE 1 -- Streamlining Site Studies and Remedy Selection

A. Amend CERCLA to require an immediate determination of the need to conduct emergency removal actions.

B. Amend CERCLA to require a single, thorough site assessment for the purpose of evaluating the need for removal actions, listing on the NPL, and the nature and extent of necessary remediation. Any local and state evaluations should be part of the assessment. Immediately following removal, if any, conduct a supplemental Remedial Investigation/ Feasibility Study (RI/FS), incorporating to the maximum extent all studies conducted in connection with the removal action.

C. Amend CERCLA to provide that EPA shall not require standardized remedies where the application of other technologies will result in a less expensive but equally protective method of protecting health and the environment.

D. Amend CERCLA to require that EPA consolidate studies to eliminate the extended time which results from redundancy, and extra costs associated with such tasks as contracting, mobilization, sampling design and performance and site security plans. If no immediate threat to public

health and the environment exists, and only long term remediation is required, EPA should consolidate all studies and include a cost/benefit analysis of any proposed remedy. If the risk assessment determines that risks are low, the site should be given a lower priority by EPA, and delisted where appropriate.

E. Amend CERCLA to allow institutional controls to be used as part of a permanent remedy.

F. Amend CERCLA to allow the use of containment or stabilization (at least as a temporary measure) rather than attempted remediation at sites where risks are low, costs are extremely high, or no proven technology exists for remediation (e.g., dense nonaqueous phase liquids (DNAPL) sites).

G. Amend CERCLA to require that performance standards are tailored to the conditions at individual sites.

REMEDIATION ISSUE 2 -- Compliance Boundaries

A. Amend CERCLA to redefine site boundaries to include areas subject to easements or other institutional controls, and compliance boundaries should be extended to the farthest limits affected by those controls, thus making cleanup goals more reasonable and more realistically attainable.

B. Amend CERCLA to provide that Resource Conservation and Recovery Act (RCRA) closure requirements are not imposed on the closure of old municipal or private landfills that accepted primarily municipal solid wastes.

C. Amend CERCLA to provide for a zone of groundwater management rather than requiring water quality standards to be met at the edge of the waste management area.

REMEDIATION ISSUE 3 -- Correlating Cleanup Goals with Risks

A. Amend CERCLA to include within the remedy selection process a specific method that correlates actual risk at a site with ARARs that reflect those risks.

B. Amend CERCLA to expand the use of institutional controls at sites with low theoretical future risks.

C. Amend CERCLA to allow a waiver of applicable or relevant and appropriate requirements (ARARs) when the lifetime cancer risk levels are within the acceptable risk range (10^{-4} to 10^{-6}).

REMEDIATION ISSUE 4 -- Risk Assessments

A. Amend CERCLA to require EPA to use exposure factors in risk assessments that more accurately describe site conditions than do the standard exposure factors.

B. Amend CERCLA to require that when quantities consumed are important, EPA must use values that are more reflective of average conditions.

C. Amend CERCLA to require EPA to ensure that national and regional risk assessment guidance documents do not conflict with each other.

REMEDIATION ISSUE 5 -- Cleanup Standards

A. Amend CERCLA to provide a tiered approach for determining the stringency of cleanup standards and the necessity for remediation. Under this approach, EPA would evaluate the site conditions, current and future uses, local land uses, and proximity to aquifers when determining what remediation is required and selecting performance standards. Case-by-case determinations should be made.

B. Amend CERCLA to provide a specific cost-benefit analysis in selecting remedies and setting performance standards so that longer remediation periods utilizing natural attenuation may be used to achieve performance standards where, for example, an aquifer will not be needed in the near future as a drinking water supply.

C. Congress must review the stringency of current CERCLA cleanup standards (especially maximum contaminant levels (MCLs)), to determine whether they are sufficiently or overly protective of human health.

ALTERNATIVE FUTURE APPROACHES

The following seven points reflect the general thinking of Task Force members but do not necessarily constitute consensus recommendations by the Task Force:

A. The goal of the Superfund program in the future should be obtaining remedial results rather than focusing on allocation of liability among PRPs and/or the government.

B. There should be no Superfund liability for the disposal or transportation of hazardous substances before a date certain (but not earlier than January 1, 1981) or for the ownership or operation of a site contaminated before a date certain (but not earlier than January 1, 1981) except in cases of demonstrated significant harm to the environment and/or public health where the responsible party knew or should have known of that harm or potential harm, or in cases where disposal violated some other legal requirement in existence at the time.

C. Mechanisms must be put in place to ensure the efficient and cost-effective implementation of cleanups by the EPA at all sites where the private parties are not liable.

D. For sites at which disposal occurs after the general liability cut off date (not earlier than January 1, 1981), mechanisms should be instituted to encourage rapid settlement; these could include liability limitations if a PRP makes timely payment of its allocated share, or the use of presumptive mixed funding.

E. The additional revenues that will be necessary to fund the general liability cut off and limitation proposals should be raised by spreading the costs more broadly through such mechanisms as taxes on the purchase and/or disposal of consumer products containing hazardous substances, expansion of the existing taxes, and taxes on commercial insurance policies.

F. Require EPA to rank new and existing sites for remedial actions based on whether there is imminent or inevitable danger to public health or the environment, and to prioritize site cleanups based on their ranking. In addition, the site delisting process should receive greater emphasis.

G. Institute an administrative review process for disputes between private parties and the EPA/states over remedy selection and technical issues.

ALTERNATIVE FUTURE APPROACHES

Introduction:

Structured differently from earlier sections of the report, this section includes the following segments: a description of how the Alternative Future Subcommittee approached its assignment; a discussion of the Subcommittee's report to the Task Force, including the Task Force's response; and, a synthesis of the general thinking of the Task Force members on each of the seven issues identified by the Subcommittee. Although the Task Force did not necessarily reach consensus on each of the seven issues identified by the Subcommittee, there was general agreement that each of the issues and proposed approaches merited further investigation and review.

The Alternative Future Subcommittee was asked to proceed from the premise that the slate could be wiped clean and to devise and recommend a national statutory framework to address the problems and issues posed by the improper disposal of hazardous substances. Assuming the Subcommittee was able to formulate such an approach, it was also asked to propose a means of making the transition from the existing Superfund scheme to the proposed "alternative future approach." The Task Force placed no constraints on the concepts available to the Subcommittee. The Subcommittee proceeded using the benefit of hindsight, adopting those elements of the present Superfund program which have worked best and avoiding those negative elements for which the program is notorious.

The Subcommittee took note of the many inequitable and draconian aspects of the present program, as well as the public benefits that may have been derived over the past decade from those elements of the program. The Subcommittee strove for recommendations that harness the individual and corporate motivations needed to make certain those benefits continue to accrue without mandating the universal application of the draconian and inequitable features of the present statute.

The Subcommittee also recognized the waste the present program has fostered in terms of excessive transaction costs, inefficient and ineffective "pork-barrel" type work by some government contractors, and scientific oversight and instruction which is sometimes repetitive and insufficiently focused on the proper goals of the Superfund program. Many response or remedial activities are currently undertaken not because they are necessary or appropriate at a contaminated site, but because they are mandated or accepted in the context of the Superfund enforcement and remediation process. The Subcommittee sought to make recommendations incorporating a system of safeguards to encourage the efficient and effective use of public and private funds and to attain beneficial site-specific results.

Discussion Points:

A. Fundamental Principle:

The Subcommittee recommended that proper site assessments and prompt, appropriate remedial actions based on realistic assumptions and scientifically sound information should be the focus of the Superfund

program. The Subcommittee also felt that the statute should focus efforts on obtaining remedial results, not on the allocation of liability among PRPs and/or the government.

The Task Force members generally concurred in the fundamental principle that the primary goal should be appropriate cleanups based on sound scientific information, and that remedial results rather than liability allocation should be the focus. In short, the goal must be to accomplish necessary site remediation as quickly, efficiently and inexpensively as possible.

B. General Liability Cutoff:

The Subcommittee recommended that there be no Superfund liability for the disposal or transportation of hazardous substances before January 1, 1981, or for the ownership or operation of a site contaminated before January 1, 1981, except:

(1) in cases of demonstrated significant harm to the environment and/or public health where the responsible party knew or should have known of that harm or potential harm; or

(2) in cases where disposal violated some other legal requirement in existence at the time.

While the general sense of the Task Force was to support the Subcommittee's recommendation that there be a liability cut-off date, no firm conclusion was reached on whether January 1, 1981 was the most appropriate date. Many suggested that the effective date of SARA in 1986 would be more equitable.

C. PRP Oversight Payment Obligation:

The Subcommittee felt that placing most of the financial burden for addressing pre-1981 disposal on the government may result in the inefficient and wasteful-expenditure of public funds, unless oversight is provided by private parties. The Subcommittee suggested that PRPs would qualify for the pre-1981 liability cutoff (in B above) only if they provided or paid (their appropriate share) for remedial engineering oversight - similar to "value engineering" to assure the efficient expenditure of public funds. The Subcommittee recommended that unless the oversight met pre-determined objective criteria, the liability cut-off could be voided.

The PRP oversight payment obligation proposal was recognized by many Task Force members as problematic. While the Task Force understood the desire to keep in check the perceived potential for "gold-plating" by EPA, there was a general sense that the Subcommittee's proposed approach was probably unworkable. The goal is to ensure the application of "value engineering" principles to each cleanup, and perhaps other means can be found to accomplish that goal.

D. Post 1981 Disposal Liability:

The Subcommittee recommended the following approach to Post-1981 disposal liability: "A PRP will be liable for its percentage share of remedial costs if it cooperates in the remedial process and pays in its proportionate amount in a timely manner. If a PRP does not cooperate after proper notice, it would be subject to strict, joint and several liability such as that which currently applies under the statute. The EPA must be obligated to pursue non-settling liable parties. The proceeds of any recovery under that strict liability formula would go first to the fund and then to the contributing PRPs in proportion to their payments."

The Post-1981 disposal liability proposal was generally recognized by most Task Force members as a workable scheme. The Task Force questioned, however, whether it would substantially reduce transaction costs relating to allocation issues. A proposal that surfaced during the Task Force's discussion of this issue -- and that many members felt deserved further study -- would establish an incentive-based program whereby there would be a presumptive mixed funding share at each site which would drop over time as the private parties took longer to reach a settlement among themselves and with EPA. For example, the law could be that the presumptive mixed funding share is 50% if commitments for the remaining 50% can be raised by the PRPs within 90 days. For each additional 30 days, the presumptive mixed funding share would drop by 10%. Part of this proposal would include provisions for ADR or expedited production and discovery of information that could provide a basis for allocation. This overall approach would provide substantial incentives for rapid settlement, should decrease overall transaction costs, and would lessen some of the harshness of the existing liability scheme.

E. Funding/Market Pressure:

The Subcommittee recommended that the cost be spread using a mechanism that recognizes the breadth of the public's interest in the goals of the Superfund program and the breadth of historic involvement, directly or indirectly, of all or nearly all citizens in the industrial activities which ultimately required such a program.

The Subcommittee elaborated on its revenue-raising recommendation as follows: "Existing corporate producer/service provider tax or taxes should be revised to generate necessary revenue. The tax should be reflected, cumulatively, at the consumer end, in the retail price of all goods and services. The amount of the tax paid on a product or service unit should reflect the potential environmental harm involved in the product or service. Some mechanism must be devised to provide information to consumers regarding how much of the cost of a product or service arises from the tax, to permit consumers to make decisions which take

environmental concerns into account."

The Funding/Market Pressure proposal generated a great deal of discussion among Task Force members. The Task Force concurred in the general recommendation that the costs of cleaning up hazardous wastes should be spread more broadly, not only for equitable reasons, but also for the purposes of discouraging waste generation and informing consumers of the role they play in the use of toxics. The Subcommittee recognized that taxing products to reflect the costs of environmentally-sensitive disposal may be very difficult to implement. Another approach, with certain specific types of products (such as batteries), might be to require manufacturers to take back all used products. Yet another approach considered would involve imposition of a fee at the point of disposal, on the theory that high disposal costs rather than high purchase costs might better educate consumers about the problems posed by products that contain toxic or hazardous substances. The possibility of placing a surcharge on all commercial insurance policies was not specifically discussed. All Task Force members recognized, however, that additional revenues will be needed to fund the alternative future approach proposed by the Task Force, and perhaps an insurance surcharge could provide a portion of the needed funds.

F. Site Ranking:

The Subcommittee recommended as follows: "New and existing sites should be ranked for remedial action based on whether there is imminent or inevitable danger to public health or the environment. The ranking should be based on a realistic view of likely future use of each site and on the realistic risks to public health or the environment posed by that use. The ranking procedure should explicitly recognize that not all sites require remediation, or at least not remediation to the same level."

The Subcommittee proposal for Site Ranking was favorably received by the Task Force. As one Subcommittee member put it, "we must try to find a way to legislate courage." In other words, EPA must have the flexibility to determine that some sites don't pose significant risks, that some cleanups are not technically possible, and that there is not sufficient money or personnel to accomplish everything at once. The Task Force also agreed on the need to find a means of permanently delisting sites so that the black mark of Superfund does not haunt them forever.

G. Review of Remedy Decision:

The Subcommittee expressed the view that the current program suffers because remedy selection decisions often are made by those with little or no actual knowledge about the local significance of a site, including the secondary implications of implementing the selected remedy at the site.

The Subcommittee therefore recommended that the remedy selected by EPA or the State should be subject to appeal to a standing administrative body of 3-5 persons whose interests fairly represent the potentially divergent views of the government as well as residential and business community members.

The Subcommittee proposal for an administrative panel to hear appeals of remedy selections was recognized by Task Force members as an effort to address a very important issue. While no consensus was reached on whether the particulars of the proposal were workable, there was agreement that some kind of administrative review process should exist for remedy selection and technical issues.

Synthesis of Task Force Direction:

A. The goal of the Superfund program in the future should be obtaining remedial results rather than focusing on allocation of liability among PRPs and/or the government.

B. There should be no Superfund liability for the disposal or transportation of hazardous substances before a date certain (but not earlier than January 1, 1981) or for the ownership or operation of a site contaminated before a date certain (but not earlier than January 1, 1981) except in cases of demonstrated significant harm to the environment and/or public health where the responsible party knew or should have known of that harm or potential harm, or in cases where disposal violated some other legal requirement in existence at the time.

C. Mechanisms must be put in place to ensure the efficient and cost-effective implementation of cleanups by the EPA at all sites where the private parties are not liable.

D. For sites at which disposal occurs after the general liability cut off date (not earlier than January 1, 1981), mechanisms should be instituted to encourage rapid settlement; these could include liability limitations if a PRP makes timely payment of its allocated share, or the use of presumptive mixed funding.

E. The additional revenues that will be necessary to fund the general liability cut off and limitation proposals should be raised by spreading the costs more broadly through such mechanisms as taxes on the purchase and/or disposal of consumer products containing hazardous substances, expansion of the existing taxes, and taxes on commercial insurance policies.

F. Require EPA to rank new and existing sites for remedial actions based on whether there is imminent or inevitable danger to public health or the

environment, and to prioritize site cleanups based on their ranking. In addition, the site delisting process should receive greater emphasis.

G. Institute an administrative review process for disputes between private parties and the EPA/states over remedy selection and technical issues.

SUPERFUND REAUTHORIZATION

THURSDAY, NOVEMBER 4, 1993

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON SUPERFUND, RECYCLING, AND
SOLID WASTE MANAGEMENT,
Washington, DC.

SUPERFUND LIABILITY SCHEME

The subcommittee met, pursuant to notice, at 9:30 a.m. in room 406, Dirksen Senate Office Building, Hon. Frank R. Lautenberg [chairman of the subcommittee] presiding.

Present: Senators Lautenberg, Baucus, Smith, Simpson, Wofford, and Warner.

OPENING STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator LAUTENBERG. I will call the subcommittee to order and welcome everyone.

Today this subcommittee is going to focus on the most controversial issue raised by current Superfund law. The question is pretty simple—"Who pays?" Who should be responsible for cleaning up toxic waste sites?

Over the past 13 years, the scope and accomplishments of the Superfund program have increased and so has the cost. Right now, EPA is poised to begin billions of dollars worth of cleanups at a majority of the 1,200 National Priority Sites. With so much money at stake—the question of who's going to pay—how much is at the center of the debate over the reform of Superfund law?

Today, the subcommittee is going to hear testimony of significant importance to that debate. First, we'll hear from the RAND Corporation—they're going to release a study on the litigation costs of small and medium size businesses caught up in Superfund. This study points to some changes that can substantially reduce transaction costs. If we aggressively settle out the tiny, de minimis contributors to Superfund sites, the RAND study indicates that we can address the problem of litigation costs in a meaningful way. In addition, alternative dispute resolution mechanisms, such as arbitration—properly designed—can also reduce costs.

These findings are significant and offer promising alternatives to proposals for more drastic changes—proposals that also have the effect of letting polluters off the hook—that have been advanced to reduce transaction costs for some.

Second in testimony, the American Insurance Association, will indicate a new willingness to consider approaches to liability reform that move toward the mainstream of the ongoing Superfund debate. It will clarify that it's not necessary to replace the current liability system with a huge, new public works program to address the insurance industry's concerns.

The proposals which AIA will discuss still raise many questions, but I want to encourage the dialog that they've already begun with this committee to arrive at a credible and equitable liability proposal which balances the competing interests. I ask all of our witnesses to show a similar degree of flexibility and creativity as we work through one of the toughest issues of this reauthorization.

Superfund embodies a principle as old as the common law, which is prominent in most of our State and Federal environmental statutes—the polluter should pay. The goal is to put the burden of cleanup on the people who caused the problem, and not on the taxpayers. To achieve that goal, Congress adopted policies which held the responsible parties strictly, jointly, severally, liable for the cost of cleanup. We also made them liable for the pollution that had been created prior to the enactment of Superfund. Like any policy decision, this one solved some problems, and it also created some. On the plus side of the ledger, it's indisputable that the current liability scheme has encouraged companies to minimize the amount of waste they produce and dispose of whatever waste is produced more carefully.

The fear of Superfund liability deters people from creating more Superfund sites. Superfund's tough liability scheme has also encouraged voluntary cleanups by parties who want sites cleaned up quickly, before contamination spreads and they end up paying for a Superfund cleanup. It has brought PRPs to the negotiating table and speeded up the cleanup process, and it has forced polluters to internalize the true costs of pollution instead of treating waste disposal as someone else's problem.

Finally, the current liability scheme recognizes that it is more efficient and cost effective to have the private sector, rather than the Government, run these cleanups. While there has been waste and fraud associated with Superfund cleanups, EPA's Inspector General and the GAO testified that there could be even more waste if Superfund were converted into a public works program. So, while current practices need an update and must be changed, the premise that private cleanups are preferable remains compelling.

There have been problems associated with the existing liability scheme as well. There has been enormous litigation and although we'll hear today that the amount of these transaction costs is similar to those in many other tort liability programs, it still represents a problem. The fact remains that today we have less money to spend on cleanups because we spend so much money on lawyers.

A second problem is that EPA has allowed polluters to bring frivolous lawsuits against small businesses and taxpayers who sent ordinary household waste to Superfund sites. As a result, a town or a small business may spend more money on lawyers than the amount that it actually owes for cleanup. We have to change that.

Finally, the decision to impose liability retroactively, in some cases on parties which acted lawfully when they sent waste to

these sites, has raised serious questions of fairness. But, there is a counterbalancing consideration and that is the incontrovertible fact that if we remove liability from those who own Superfund sites, we'll be shifting the cost of cleanup onto people who had nothing to do with creating the problems. If we eliminate retroactivity, today's taxpayers will have to pick up the tab—and a big one, at that.

In reviewing proposals to reform the liability scheme, I'm going to be focusing on whether they achieve the twin goals of reducing transaction costs and improving fairness. We shouldn't make radical changes to the liability scheme—changes that could seriously disrupt the cleanup program—unless we are convinced that such changes are the best way to improve fairness and reduce litigation. We cannot allow the debate on liability to serve as an excuse to shift the cost of cleanup away from the polluters and onto the backs of the American taxpayers.

We are joined here by the Chairman of the Environment Committee, Senator Baucus. I would ask him if he would make his opening statement.

OPENING STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM THE STATE OF MONTANA

Senator BAUCUS. Thank you very much, Mr. Chairman. I first want to commend you for holding this hearing as well as all the many other hearings that you've held on Superfund, generally. The one you're holding today on liability is particularly important. I thank you for your leadership and all the efforts you have undertaken to help us form this legislation.

You may recall Mr. Chairman, that when we passed Superfund in 1980, we had hoped to quickly and cost effectively clean up our Nation's toxic dumps, and to accomplish this, we gave the Environmental Protection Agency broad authority to order any polluter at a site to pay for the entire cost to clean up that site. As it now stands, the EPA typically orders the larger polluters to clean up a site and they, in turn, sue the smaller polluters and their insurance companies to recover some of the cost. In the end, the courts determine everyone's fair share.

This liability scheme, as you correctly noticed and as most commentators have correctly noticed, has come under attack, being called unfair, draconian—some call it a cash cow for attorneys. Critics rightly argue that this system forces the EPA and industry to spend more time and money finding culprits than cleaning up contaminated sites. Some have suggested that the system is so unfair, so litigious, so time consuming, that we should toss it out and start over again.

Before we do that, I think it's worth noting that Superfund and its liability system have had some positive results. It has made people think before they act, it has encouraged investment in environmental technology to prevent pollution and, in the end, has made everyone realize pollution does carry a price and that polluters should pay their share.

Still, Superfund needs reform. We need to reduce legal costs, make the liability system more fair and, most importantly, we need

to see that problem sites are quickly and effectively cleaned up. Today's hearing, I think, will be especially helpful to the committee in examining proposed ways to make Superfund's liability system more fair and less litigious.

There is no shortage of proposals. They range from the elimination of retroactive liability to a system of proportional liability to one of independent arbitration. Clearly, cleanup costs must be divided more fairly and with less litigation. As we consider advice on how best to do this, we must measure each proposal against all criteria.

First, does the proposal make Superfund more fair for everyone, or does it make it fair for some and unfair for others? Second, does the proposal lower litigation and transaction costs, or does it simply shift these costs and lawsuits to taxpayers? Third, does the proposal speed cleanups or will cleanups be, in fact, delayed while polluters continue to fight over their fair share? And finally, who will pay? Some of the proposals before us today require the Government to pick up a substantially larger share of the costs—from $500 million to $1.5 billion or more each year. Where will that money come from? If it comes from new taxes, as some have proposed, should there be a guarantee that the money will be made available to EPA and the Superfund program and exempt from existing budget caps?

I intend to measure all serious proposals against these four criteria. In the end, though, only one measure of efforts to reform Superfund will matter—that will be the results we get. Not how many lawsuits are filed or whether one polluter pays more than the other. What matters is whether we return environmentally blighted lands to productive use, and whether we continue to deter pollution in the most cost effective way, recognizing that our resources are limited.

Again, thank you, Mr. Chairman, for your efforts in holding this hearing.

Senator LAUTENBERG. Thank you very much, Senator Baucus, for your comments.

Next, Senator Smith.

OPENING STATEMENT OF HON. ROBERT SMITH, U.S. SENATOR FROM THE STATE OF NEW HAMPSHIRE

Senator SMITH. Thank you, Mr. Chairman, and thank you for holding this hearing—one of many hearings you've held on Superfund—and this one specifically on Superfund liability. I think you've been very fair and conscientious in having all sides of the issue of Superfund presented in all of the hearings that we've had.

I personally don't believe that there's another element in the Superfund program that is in more need of change than the liability structure. It's patently unfair, it's punitive, it's inefficient, and it's costly. I'm very familiar with the negative impact on economic growth and development activities that the system has had on businesses and local communities, not only in New Hampshire, but all over America.

Businesses cannot continue to operate competitively with this kind of uncertainty hanging over their heads. Let me draw an

analogy. An individual would face similar financial uncertainties if, when buying a car, they were told that their monthly payments would range anywhere from $300 to $500. So, when they bought the car, and they thought the car was paid off, the company came back and told them that the car they bought 5 years ago was more expensive now, and that they owed $3,000 more. No individual or business should be forced to deal with this kind of unknown and unlimited liability.

The President himself criticized the Superfund statute in the State of the Union address when he said something to the effect that it has been a full employment program for lawyers. I couldn't agree more. Shakespeare said the first thing we should do is kill all the lawyers—I'm not going to identify myself with those remarks, other than just to agree.

[Laughter.]

Senator SMITH. What I can't seem to figure out, Mr. Chairman, is that if the lawyers are the problem, why do we continue to involve them in the process?

[Laughter.]

Senator SMITH. There has to be a better way of allocating responsibility for cleaning up our Country's hazardous waste sites that brings more fairness and more certainty into the program. We cannot allow, in my opinion, this Congress to move on, to slip by if you will, without making significant changes to the entire Superfund program. Liability is one of the most important areas in need. I have to emphasize again—I don't think that nibbling around the edges, making certain administrative changes in these matters, can really do the job. I think we have to make significant changes, and indeed replace certain portions of the statute.

I look forward to the debate this morning, Mr. Chairman, and thank you, again, for having the hearing.

Senator LAUTENBERG. Thank you, Senator Smith.

We are joined here by Senator Simpson. Welcome.

OPENING STATEMENT OF HON. ALAN K. SIMPSON, U.S. SENATOR FROM THE STATE OF WYOMING

Senator SIMPSON. Mr. Chairman, you are always fair with us, although you do come here with highly inflamed passions about this.

[Laughter.]

Senator SIMPSON. Nevertheless, you are fair and it's always a delight to work with you and I enjoy it. I second what Senator Smith said—except the part about lawyers—because remember, when Shakespeare was using that, he was portraying that comment as to how these conspirators were going to carry out their nefarious plan and the only way they would be able to do that is to kill all the lawyers. I want you to get that in context.

[Laugher.]

Senator SIMPSON. That is a very important distinction—to kill all the lawyers so they could get their plan done. I just wanted to correct the record there.

You're on the right track referring to a system that is all out of whack. I figured I'd seen the moon from both sides when the Wash-

ington Post endorsed the Chemical Manufacturers' plan. Then you know it's a new day.

[Laughter.]

Senator SIMPSON. But, it's a new day because it's absurd and when you get to absurdity, that is one thing the American public understands. How we could take a car battery in 20 years ago and suddenly get stuck for something today is outside the realm of reality.

I'm ready to help. We have to do things here with these various proposals. Some of them are very intriguing. It looks like some in the industry want to tax themselves twice. These solutions—the joint and several—that's where the Post, and I think very appropriately so, has said that the system can't work. That's a type of reform proposal.

One thing is certain—to share Bob's view—we just can't afford to do business as usual here. The liability system has to be changed and I think you agree. If we can do it and not let everybody play "carve out," and do what we need to do about letting people off the hook—if we're going to let people off the hook, we won't get there. To try to do it all is a big bite, but if we're going to salvage Superfund—and I was one of the original coauthors on that, with Senator Stafford deeply involved—then we're going to have to get this liability scheme corrected.

As was said, when someone has taken just a single item to a reclamation site many years ago and now we have 25,000 potentially responsible parties, and the number growing every day—that can't work.

I appreciate your having the hearings. We'll have some good questions. I hope we hear some sensible addressing of an issue, where we won't have anybody coming in and trying to stick with the way it is now. Surely we won't have much of that.

Thank you, Mr. Chairman.

Senator LAUTENBERG. Thank you for comments.

We're joined by Senator Wofford. Senator.

OPENING STATEMENT OF HON. HARRIS WOFFORD, U.S. SENATOR FROM THE STATE OF PENNSYLVANIA

Senator WOFFORD. Mr. Chairman, I won't go back to Shakespeare, but I think that the African Queen has a punch line that you should hold onto after Senator Simpson's "nevertheless, thank you for what you do". As Katherine Hepburn is fished out of the river, having come all the way down the river, the German officers said, "It's impossible—you can't," as she'd come down the river, "You can't have come all down that river, it's impossible." She said, "Nevertheless, we came down it." So, for all the problems there are, hold onto that "nevertheless, we thank you".

Also, as we look at the problems of the liability system, which are enormous, all of us have vivid examples of those problems. Pennsylvania has 107 Superfund sites—that's the second most in the Nation—I think we're only behind New Jersey, Mr. Chairman, so you can imagine that I, too, have heard many of those problems.

Nevertheless, the overriding concern must, in the end, be the protection of human health and the environment. But, the prob-

lems are there and I'm glad this hearing is being held and we're going to look at them straight. The costs of determining liability are too high and we must find ways of lowering them through alternative dispute mechanisms, greater use of EPA's ability to settle with parties that have de minimis liability, maybe even mix funding between the Federal fund and State funds. I am determined that together we must find ways to lower those costs and I'm delighted that the General Accounting Office is presenting us with a study that concludes that EPA can do more right now, with its current powers, to reduce the transaction costs, so I welcome that report. I urge EPA to give it careful consideration and for us to weigh the testimony here today.

Nevertheless, we thank you.

Senator LAUTENBERG. Nevertheless, we thank all of you. As everyone recognizes, we do have some differences of view, but I think it's fair to say that despite the jousting here, the fact is that we do agree that reform is necessary. That's the purpose of this hearing. This is the seventh hearing on Superfund reauthorization this year, by the way.

I remind my colleagues of the hearings held on Superfund. A significant accomplishment has been made by the program already, despite the problems. There are a number of sites that have had attention. The numbers that are approaching final cleanup stage continue to grow. The efficiency of the agency continues to grow. I'm happy to see the interest of my colleagues. As Senator Simpson indicated, in 1980 he was a part of the design and development of this program and despite significant opposition to renewal, we are now in the third cycle of Superfund's being. I think it's fair to say that the program has gotten better, giving us a chance to examine the weaknesses and that's the purpose of today's hearing. We'll continue to examine what needs to be done before we plunge into the act of rewriting or reauthorizing Superfund.

I call now the first panel of witnesses to the table.

Mr. Reilly, Ms. Edelstein, Mr. McGavick, Mr. Cooper, and Mr. Pope.

Thank you all for being here. We will start with Mr. Reilly. I caution you, please, because of the number of witnesses and the interest of Senators in asking questions, to hold your remarks to 5 minutes. We will include your full statement in the record.

Mr. Reilly, we invite you to go first. When the clock is on red, please stop.

STATEMENT OF BERNARD J. REILLY, CORPORATE COUNSEL, DU PONT, ON BEHALF OF THE CHEMICAL MANUFACTURERS ASSOCIATION

Mr. REILLY. Good morning, Mr. Chairman and members of the subcommittee. My name is Bernard Reilly. I am Corporate Counsel for Du Pont.

I'm pleased to be here today to testify today on behalf of the Chemical Manufacturer's Association.

CMA and its member companies, including Du Pont, have been working with the EPA to try to make Superfund work since the program was created in 1980. We now have 13 years of firsthand

experience with all of Superfund's problems, including those created those created by the law's joint and several liability standard.

Last December, at his economic conference in Little Rock, then President-elect Clinton said he was appalled by the paralysis of the Superfund program. President Clinton also said something else that day—something we in the chemical industry took to heart—he said that all of us are duty bound to do a much better job of cleaning up contaminated waste sites. The President was right. We're duty bound to make Superfund work and work better. That's why we're here today—not to play the blame game, not to complain about the problems in the Superfund program—we're here to present solutions for putting Superfund back on track. We believe our plan answers President Clinton's challenge to make Superfund work. We also believe it addresses Vice President Gore's efforts to reinvent Government.

Our proposal is simple, straightforward, and gets to the heart of the liability system as we see it. We call our proposal The Fair Share Liability System. Our Fair Share System determines a party's liability for a Superfund cleanup on a proportional basis. That means that each party pays for what it contributed toward contaminating a site.

Mr. Chairman, we believe the Fair Liability System follows the principles for Superfund reform already outlined by President Clinton, Administrator Browner, and others. First and foremost, the Fair Share scheme would keep the "polluter pays" principle intact. Next, Fair Share would make Government work better. It would force EPA to administer the Superfund program more efficiently and more effectively. It also would substantially speed the pace of cleanups and lower transaction costs.

In addition, our Fair Share proposal would apportion liability based largely on the well-known "Gore factors," developed by the Vice President back in 1980. Moreover, Fair Share is not a budget buster. We believe that demands on the trust fund, because of the orphan share payments, should be offset by reduced enforcement needs, remedy selection reforms, and the like. However, if it can be shown that there is a need for increasing funding, CMA strongly believes the increase must be financed be a broadbased funding mechanism such as the current Superfund corporate environmental tax.

Our Fair Share proposal would replace the current joint and several liability standard that has set off a chain reaction of lawsuits and that has led to the meltdown of the Superfund program. Our Fair Share system would shut down the chain reaction and break the cycle of litigation. Under the proposal, EPA would assemble information at a site, identify the responsible parties, and file an administrative petition to start an allocation process. An impartial arbiter—we suggest an administrative law judge—would assigned to allocate responsibility for paying the cleanup costs. All the while, the remediation process would move forward on a separate track and independent of a liability system, unlike the current system where the cleanup decisions are constantly being pulled down into the joint and several quagmire.

In our Fair Share proposal, the arbiter would consider the facts, weigh the evidence, and assign responsibilities in a streamlined,

flexible process. We think this can be done in 18 months or less at most sites. Further, we think the plight of the companies that have tiny shares like the de minimis parties—and the so-called de micromus parties—can be dealt with by the arbiter and their share can be calculated up front in the program and they can be let out of the net.

Our proposal permits appeals of the arbiter's decision, but the standard of review is notoriously tough. An allocation can't be overturned unless is it is arbitrary and capricious. Beyond this, litigation—especially to third party contribution suits that we all now are bringing against each other and the towns—would be prohibited. Under our Fair Share system, the trust fund would pay for the shares of parties who cannot be identified, who are defunct, insolvent, or bankrupt—the so-called orphan shares. To assure that the trust fund doesn't pay more than its fair share, our proposal calls for EPA to appoint a guardian to represent the fund in the bar process and to argue for a smaller share for the orphan as is appropriate.

One last point. Although our proposal would eliminate joint and several liability, EPA still would retain authority to order one or more parties to conduct removal or remedial action at the site, under the authority of section 106 of the current law. The difference between the current practice and our proposal is that under Fair Share liability, the parties targeted by the order would be reimbursed for any costs incurred beyond their rightful share.

As a final comment, fixing the liability standard alone will not correct all that's wrong with the Superfund program, but it will go a long way toward getting the program on track. We think it should be coupled with meaningful reform of the remedy selection process and, if so, it will be a fresh start.

Thank you.

Senator LAUTENBERG. Thank you very much, Mr. Reilly.

Ms. Edelstein?

STATEMENT OF JAN EDELSTEIN, DIRECTOR, NATIONAL ENVIRONMENTAL TRUST FUND PROJECT, WASHINGTON, DC

Ms. EDELSTEIN. Good morning. My name is Jan Edelstein and I'm the Director of the National Environmental Trust Fund Project, which was formed in 1989 to promote an effective replacement for Superfund's retroactive liability standard. I appreciate the opportunity to testify this morning.

The NETF Project is supported by the American International Group, Continental Insurance Company, Talegen Holdings, formerly Crum and Forster Insurance Companies, and Fireman's Fund Insurance Companies. Since the NETF's founding, more than 1,700 small and large businesses, local governments, and individuals, have endorsed our proposal. It is a very simple, straightforward one—eliminate Superfund's retroactive, site-specific liability and replace it with a broadbased fund financed by business.

In the short time I have with you today, I'd like to highlight five areas. First, Superfund should be, above all, a public health and environmental protection program. Yet today, by all accounts, this goal takes a back seat to fundraising. Our proposal is the only one

which assures that Superfund will once again be refocused on public health and environmental protection. Freed from the constraints of raising money, EPA, states, and local communities can zero in on the most effective remedy required to eliminate the public health threat. It will result in more money going into cleanup and public health protection without using the Nation's money to pay for lawyers and noncleanup activities. Most of EPA's 1500 Superfund lawyers today could be reinvented into cleanup personnel.

Second, it's been said that our proposal is not viable because there is no way to fund it. This may have been a fair criticism a year ago, but it's no longer legitimate. Business is rallying around a credible financing plan for the expanded trust fund to replace retroactive, site-specific liability. The emerging consensus would build on the existing Superfund tax structure and the principle that those groups would benefit from the relief it provides for financing. For example, many mid-to-large businesses are favorably disposed to increasing the environmental income tax from one-eight of a percent to one-quarter of a percent. Many in the small business community are prepared to support a new line contribution for small business of $100 million, and insurers have endorsed a new $300 million contribution from the insurance industry in this overall context.

My written testimony goes into more detail, but suffice it to say that it is clear that a significant portion of the business community is willing to support higher taxes in exchange for liability relief.

Third, I'd like to address a few myths about our proposal. Starting with the claim that it would eviscerate the "polluter pays" principle. That polluters pay is the big lie of Superfund. There are over 26,000 PRPs. Do you really believe that they are all polluters? If you buy into the polluter mythology, then you are stigmatizing, as environmental criminals, scores of businesses in your communities that you've known and respected for years. What "polluter pays" really means to Superfund is that cleanups are financed by business. In this regard, our proposal remains true to the "polluter pays" doctrine. Businesses will still pay, but through a more efficient fundraising than the adversarial, litigation-based, site-specific model used today.

Another myth is that our proposal would result in a massive new public works program. This is nonsense. Superfund already is, in large measure, a public works program, since the Government makes all the important decisions and directly spends about half of all Superfund monies. More importantly, we propose delegating the management of the program to States with demonstrated competence in this area. This would substantially reduce the specter of EPA administering an even larger construction program.

A third myth is that the program would suffer major disruptions when retroactive liability is replaced. This, again, is not true. We propose requiring PRPs subject to consent decrees or settlements to continue to manage the cleanups for which they have settled as a condition for the fund picking up the costs in the future. Since EPA tells us that PRPs are doing 70 percent of the starts for remedial design and remedial actions today, that means we will have the private sector engaged as managers in much of the work of the

next few years as a State delegation program is implemented and EPA builds its own force.

Fourth, I'd like to comment on the Fair Share proposal. This plan will result in an even more inefficient program than today because it shifts to the Government the tortured process of allocating liability. Indeed, I find it ironic that the same voices that argue that private parties are more efficient than EPA at running cleanups, want us to believe that the Federal Government will be able to do in 18 months what it now takes the supposedly more efficient private sector years to do. The most fatal defect of the Fair Share approach, however, is that it offers no relief to parties especially hammered by the current system. There are over 20,000 PRPs who do not have the experience, the resources, or the records of past waste disposal practices, to effectively engage in an administrative process. And, of course, it does nothing to alleviate the tremendous litigation between PRPs and their insurers over allegations of old coverage.

Fifth and last, I'd like to address the assertion that some have made, that our proposal is not viable. The test of political viability is how deep and broad your political base is. Measured against this standard, replacing retroactive liability with a no-fault fund now has the broadest support of any Superfund liability option. From Dr. Ben Chavis, Executive Director of the NAACP and founder of the Environmental Justice Movement, to small and medium size business advocates such as the American Furniture Manufacturers and the National Food Processors Association, oil companies like Texaco and Phillips Petroleum, chemical companies like Olan, Inc., manufacturers like ALCOA, and the dozens of local governments who support Local Governments for Superfund Reform, and insurers, have all endorsed elimination of retroactive, site-specific liability.

Senator LAUTENBERG. Thank you very much, Ms. Edelstein. Your full statement will be included in the record.

Mr. McGavick, please, you're next.

STATEMENT OF MICHAEL S. McGAVICK, DIRECTOR, SUPERFUND IMPROVEMENT PROJECT, AMERICAN INSURANCE ASSOCIATION, WASHINGTON, DC

Mr. MCGAVICK. Mr. Chairman, members of the committee, it is a privilege to be here. The members I represent appreciate the opportunity to share our views.

My name is Mike McGavick and I'm the Director of the Superfund Improvement Project of the American Insurance Association. The AIA is a Washington, DC based trade association comprised of 254 insurance companies which write a large percentage of the commercial property and liability insurance sold in the United States.

Our advice to the committee is the same as the advice given to any journalist, any civil or criminal investigator, and ordinarily to any Government investigator—follow the money. In Superfund and its inherent misincentives, what you will find is that the money too often leads you headlong into a lawyer's pocket and not to a cleanup site. According to the best studies that we have seen, this is true

roughly one-third of the time. We ask the committee to ask itself the same question we ask Americans all over this Country—if our Nation is to spend, as the University of Tennessee has estimated it will cost to complete Superfund—roughly $150 billion to clean up old waste sites, would you like $50 billion to go to lawyers?

Moreover, when it is made plain that these grotesque transaction costs are fueling the delay of cleanup, and when people realize that these costs and those delays stem from an inherently unfair liability scheme, they get still more upset. When it becomes clear that it's not really "polluter pays," but rather "deep pocket pays," it becomes clear why businesses get so angry and fight so hard.

The real kicker, the real unfairness, is retroactive liability. Nothing can be more maddening, nor is perceived as more unfair than to make people pay enormous sums today to pay for the legal, often Government-directed handling of wastes decades ago. To call such businesses polluters is to cheapen the term. To create a cottage industry, wasting our money discovering how Grandma sent out the garbage when she ran the business decades ago is only a certain way to delay the cleanup of America. We must acknowledge the massive failures of Superfund and apply common sense cures to this critical program. Our Country's environmental and economic health demands major surgery and not superficial measures.

For the insurance industry, the stakes of this reauthorization could not be higher. As the Brookings Institute has estimated, it is conceivable that as much as $50 billion of the cleanup costs from Superfund could fall to the insurance industry, due to what we view as the misinterpretation of our facts by some States.

As with all of Superfund, it is impossible to get a handle on the real costs, especially when one adds the fact that this dispute is carried out between ourselves and our insureds, under State contract laws, creating a confusing, patch-quilt of results. We cannot point to the individual company implications, because the variables are too great, but we can assure you that the overall numbers threaten to swamp the roughly $70 billion in surplus or equity value of that segment of the industry caught up in Superfund.

Moreover, whatever one views on the underlying coverage dispute, certainly no one can argue that the roughly $1 billion dollars in transaction costs, wasted under the current system of which roughly half goes to these coverage disputes, is worth its paltry return in cleanups.

Given our central belief that the liability system is the heart of the problem with Superfund, it will not surprise the committee that we wholeheartedly support the efforts of the Treasury Department to substantially reform the Superfund system and get the money straight to cleanups. As you know, the Treasury proposal roughly mirrors what Ms. Edelstein has just described.

Leaders of our industry have written Secretary Bentsen and volunteered to pay taxes directly upon our industry of up to $300 million per year if the reforms are sufficient to truly eliminate the transaction costs to America.

We commend that proposal as a good starting point for truly making Superfund work. We add that we are willing to work with the committee and its staff, and with all parties, to come up with better answers if they can be found. We are examining some cre-

ative proposals in these days, but nothing we have seen matches the effectiveness and wisdom of the Treasury proposal and we strongly support it.

Our goal is two-fold. For America, it's faster cleanup at fairer cost. For ourselves, fair, affordable, and predictable costs to the insurance industry. We are certain that these goals can only be achieved by real reform of the liability system.

Again, we thank the committee for this opportunity to share our views.

Senator LAUTENBERG. Now we'll hear from Mr. Cooper, please.

STATEMENT OF BENJAMIN Y. COOPER, SENIOR VICE PRESIDENT, PRINTING INDUSTRIES OF AMERICA, INC., ALEXANDRIA, VA

Mr. COOPER. Thank you, Mr. Chairman. My name is Ben Cooper and I'm Senior Vice President for Government Affairs for the Printing Industries of America. I also serve as a member of the Board of Directors and Environment Committee Chairman for the Small Business Legislative Counsel, a permanent coalition of a hundred small business associations. I'd like to state that this organization has, at its Board of Directors meeting this morning, endorsed the comments I will make and the suggestions for Superfund reform.

I want to thank you for holding these hearings and I also thank your staff for their work, and for your being very open to the small business community throughout these discussions.

I want to state from the outset that the small business community is not seeking an exemption from Superfund. We feel very strongly that we have a role to play in the cleanup of the Nation's Priority Waste Sites. I'd also like to state that while we are open and willing to work with all groups that are proposing reform to Superfund, at this point, those of us in the small business community, who are represented in this testimony, are not endorsing any specific reform proposal. We would prefer to address our own concerns and see how those concerns fit into the overall reform effort.

Superfund law has been a disaster for the small business community. Small business simply does not have the resources or the technical capability to keep up with the legal actions and the ongoing process. Consequently, for small business, Superfund has become a cost-driven activity. A party is identified as a de minimis contributor in a site, and yet it may take 5 to 7 years before that party ever has an opportunity to pay its share of the original de minimis settlement. In the meantime, that company has spent upward of two to three times the settlement amount in additional transaction costs.

Superfund, ironically, has become a disincentive to multi-generation small business. Ironically, one of the worst things that could happen to a small business is to have that business passed on, generation after generation, where the sons and daughters owning those companies of today are paying for the waste habits—generally, not illegal habits—of their fathers, mothers, grandfathers, and grandmothers. We believe very strongly that no law—Superfund or any other Federal law—should serve as a disincentive to family business.

There is no question that the most significant problem in Superfund is retroactive liability. Small firms simply do not understand how they can be required to pay for the cleanup of waste legally disposed of 10, 20, 30, or more years ago. Similar to the problems with retroactive liability are those associated with the ability of parties to sue one another during and after the Superfund settlement process. Let me give you one example of a company that has faced this type of problem. One of our member firms in Pennsylvania was named as a party in a Superfund site for waste which was part of ordinary trash pick-up by the city in the 1950's. This company was told by EPA in 1989 that its de minimis settlement would be about $2,500. Unfortunately, the company was subsequently sued by the other potentially responsible parties for $250,000. Since 1989, this company of 73 employees has paid $97,000 to defend itself against that suit. The owner has still not paid EPA the $2,500 toward the cleanup of the waste site nor, of course, has the site been cleaned up.

We have made a number of statements here about things we do not like about the system and what we do not want to do, but now let me make some suggestions about what the small business community is interested in in Superfund reform.

First of all, we feel very strongly that retroactive liability for small business must be eliminated. The exception to that is that, obviously, liability should be retained for any company whose waste disposal practices were in violation of the law at the time of disposal. Small business must be protected from lawsuits when they have been identified as de minimis contributors. We also believe that for those companies that are in the de minimis process, we must expedite that procedure so that these processes are not dragged out for 5, 6, 7 years. We are also willing, in the small business community, to establish a fee type waste disposal or some other financing scheme to provide the revenue from the small business sector to assist in Superfund site cleanup.

We are aware that the elimination of retroactive liability is a dramatic departure from the current Superfund law; however, it is essential to small business. Prior to 1987, small business generally was not required to maintain records of waste disposal. Consequently, small companies are in an unusually difficult position when challenged on waste practices of the past. Although we are aware that many companies still do not have adequate records, the law is clear on their responsibility to maintain such records today.

It's important to understand that no part of our proposal is valid without the other parts. Just as we have difficulty supporting an exemption for small business as a stand-alone measure, no single part of the points we have mentioned are valid without the others.

In conclusion, Mr. Chairman, we urge this committee and the Environmental Protection Agency to resist the temptation to view the Nation's business community as environmental criminals. Our members are overwhelmingly honest men and women who have their communities interests at heart, and they do not want to be part of any environmental problems. We have become sensitive to the fact that when we toss around terms such as "Make the polluter pay," we are talking about these small firms.

Thank you very much, Mr. Chairman.

Senator LAUTENBERG. Thank you very much, Mr. Cooper.
Mr. Pope?

STATEMENT OF CARL POPE, EXECUTIVE DIRECTOR, SIERRA CLUB, SAN FRANCISCO, CALIFORNIA

Mr. POPE. Thank you very much, Mr. Chairman and members of the committee. I am Carl Pope, the Executive Director of the Sierra Club, and I appreciate the opportunity to appear before you today.

I think it is important to understand, in discussing the issues of transactions costs and equity, that there is to some extent an intrinsic conflict here—the more we try to identify site-by-site, the particular notion we might have of equity, the more likely we are to drive up the transactions costs. So I think we need, in looking at this situation, to recognize that there are two goals here we are achieving and that, to some extent, they may be in conflict.

I also want to emphasize the Sierra Club's belief that the largest problem with the Superfund as a public health protection measure, and the place where we believe we can most rapidly accelerate the progress of the program toward the goal we all share—cleaning up these sites—is not in the liability area, although that may well be the most controversial aspect of the program. It is in the process by which cleanup standards and remedies are selected, and we believe that improving EPA's performance in this area would do more than any other single change to improve the effectiveness of this program in protecting the American people.

It is important to understand that any scheme we come up with for allocating the costs of cleaning up hazardous wastes will be unfair. As has been pointed out, many of the wastes which were disposed of were disposed of legally. It is also unfair to put this burden on the general taxpayers. The joint and several liability currently embodied in the law has the benefit, at least, of associating the costs with those who benefited from producing the waste or who were responsible for generating the waste. We should, however, make a number of reform changes in the system. It is attractive to try to make very dramatic changes in the system because we can all see some of the problems with the system we have today, but the Sierra Club would like to urge that those who would like to change this system in a radical way should bear at least three burdens, and we are not certain that anyone in fact can bear these burdens in the real world and we're skeptical that any proposal before you will.

First, funding sources must be identified and they must be reliable funding source to make up for whatever part of liability is removed from responsible parties. It is easy to conceptually design taxes which will do this—it is not easy, in the present political climate in this city today to pass such taxes. Second, we need to ensure that the cleanup process is not slowed. There is the danger that in shifting from one liability regime to another, a great deal of ongoing activity will be slowed while responsible parties and EPA both wait and let the new rules settle down. Third, we need to make certain that we deliver on our ultimate goal, which is more cleanup, not less.

Having said that, however, we believe there are changes in the present liability scheme which do not run these risks and which clearly should be implemented. Government should help allocate the costs. It is true, as has been pointed out, that many small businesses are not equipped to get involved in these huge, multi-party wrangles and settle this. EPA should be given adequate funds to pay for whatever we decide is going to be the newly defined orphan share. Poorly defined, the orphan share could become the lion's share.

There should be nonbinding arbitration processes to help with this allocation and we suggest nonbinding only because we believe that if you make them binding, you will probably run the transaction costs up to roughly the same level that you get from the program. We should definitely stimulate—and EPA should be more aggressive, and this committee might want to consider more instruction and more authority—the early settlement and the protection of the de minimis contributors and the exemption of de micromus contributors.

Finally, we should cap the liability of municipal waste generators whose contribution is typically that they have contributed volume, but not toxicity, and whose involvement in this process is responsible for a number of the horror stories which the committee has heard about and which we've all heard about and experienced.

And, finally, we should increase EPA's authority and willingness to structure settlements and to take ability to pay into consideration. In doing this, many of the transaction costs which we currently incur—which are clearly frivolous and not going to yield real benefits, real resources, and real cleanup—are taken off the table early, before the transaction costs associated with them have been incurred.

We believe this more focused set of reforms is, perhaps, a more reliable way to reduce transaction costs in the real world and that the burden rests on those who propose more radical solutions to explain some of the problems which we believe they would raise.

Thank you very much.

Senator LAUTENBERG. Thank you very much, Mr. Pope.

For the benefit of my colleagues, I suggest that we go through a 10-minute question period and, if necessary, we'll go around again. I would ask the witnesses to do something that we, on this side of the table, have not quite learned, and that is to try to keep your answers fairly short even though, again, on this side of the table we haven't learned it, but we'd like to see a nice example of how it can be done. Senator Simpson is the only one.

[Laughter.]

Senator LAUTENBERG. Mr. McGavick, we thank all of you. It is so nice to sit across from this broad spectrum of uniform opinion. It's reassuring.

[Laughter.]

Senator LAUTENBERG. Mr. McGavick, you said that AIA is interested in discussing options that are different for liability reform, besides the Treasury proposal. What, for instance, might you be suggesting?

Mr. MCGAVICK. Well, certainly we're aware, and the spectrum of opinion articulated by the committee members earlier indicates

that there are people who still believe only a site-specific, polluter-pays principle program should be put forward—that there should be no change to public works and some of the other goals of the existing system. What I did say in my testimony is that we're open to formulations that would move past the elimination of retroactive liability. I would say that we're not optimistic that they would work as well, but we're open to them.

We're currently evaluating a proposal that came out of the PRP community—not something that we developed ourselves—that would combine some of these fair share allocation schemes with a tax-based contribution from the insurance industry and, in that same proposal, would work to eliminate the coverage disputes that add so greatly to the transaction costs. Obviously, such a proposal would retain the site-specific, polluter-pays principle; it would not create a public works program. It could even retain the existing liability system for recalcitrants which obviously match the desires of some people, as I mentioned before.

Clearly, as I said in my testimony, redirecting the monies wasted in transaction costs—roughly $1 billion per year, half of which is these coverage disputes—is clearly a benefit, and if you could redirect it to cleanup, that's something that we would be intrigued by.

As I mentioned earlier, we've indicated to Secretary Bentsen, when we were asked about funding for the treasury proposal, that we would support something around $300 million per year if, indeed, that proposal did eliminate retroactive liability and thereby eliminate the transaction costs. Roughly the same figure could be applied to this proposal if, indeed, it succeeded in eliminating those transaction costs.

Senator LAUTENBERG. Does that balance out the funding that might be lost as a result of changing the character?

Mr. MCGAVICK. It's not clear whether it would or not. We see wildly variable estimates on the differences that might be made by an allocation scheme as opposed to the existing system. EPA's own range of estimates, as I've read them, is $150–$420 million, so it's kind of hard to pick a number in a range that large. We wouldn't want to be attached directly to the orphan—that's not our responsibility. Our responsibility, as these schemes argue, is to recognize that, in some jurisdictions, we're being asked to contribute and therefore to find a sum that would be an appropriate replacement for that. It's a different concept.

Senator LAUTENBERG. You're not insisting on establishing a public works program—and Ms. Edelstein, if I offend you by calling it a public works program, it's easier because everybody understands what we're talking about; I noticed that you took umbrage at it being called that, but we call it like we see it.

[Laughter.]

Senator LAUTENBERG. So, you're not insisting on that kind of approach. And you would not, if I understood you correctly, fight to abolish the retroactive liability scheme. Is that a fair characterization?

Mr. MCGAVICK. We are absolutely open to solutions which meet the description you've made. At this point, I would not want to misinform the committee—we still do support Treasury. We still think, as far as we've seen, that's the best way to go. These other

proposals I've referred to are fairly new and require a great deal of examination of detail. But there's no religious principle to which we're dedicated. We are open to other ways to solve the problem.

Senator LAUTENBERG. Mr. Reilly, what do you think of the combination of the CMA approach and contribution from the insurers that Mr. McGavick represents?

Mr. REILLY. Senator, so far CMA has only been able to fully support Fair Share; however, we're flexible and we're open to better ideas if they come along. We're acutely aware of the resources that are being wasted in the insurance litigation—my company is wasting an enormous amount of money right now, suing its carriers over remediation costs. If there is a way to eliminate that litigation and get that money into cleaning up sites, my company is very openminded, if the details can be worked out.

Senator LAUTENBERG. It's interesting that you mentioned the litigation against the insurer, because often the litigation refers to a dispute between parties. In my case, in the case of New Jersey, there are a number of communities—I think one out of five communities in New Jersey—that are being sued. That's a convenient way to divert attention.

Mr. REILLY. And Fair Share would wipe out those suits, Senator. CMA Fair Share would wipe out those suits.

Senator LAUTENBERG. Yes, I think so. But, that's part of what we're trying to learn in the process of review because, again, whose share? It doesn't say you can't sue, it doesn't say that you don't have access to the courts.

Mr. REILLY. Yes, it does, Senator.

Senator LAUTENBERG. In terms of the dispute over what is the fair share—who assigned it. Here we have records manifest that say we shipped household garbage—innocent kind of stuff.

Mr. REILLY. We'd want the neutral to make that call, Senator, and our ability to sue the municipalities—and I've been in the unpleasant and unfortunate circumstance of being the plaintiff in some of those suits—those suits would be wiped out if we went Fair Share. The judgement of the neutral would rule; I'd have no cause of action against a municipality.

Senator LAUTENBERG. Ms. Edelstein, Superfund budget shares an overall budget cap in the process as it presently exists. The Veterans Administration, HUD, and other agencies—that's the group to which Superfund is assigned for appropriations. That means that any dollar appropriated for Superfund is going to be a dollar less going to Veterans, Housing and other accounts under the same budget ceiling. Would you want to pick which agency we reduce to offset the $15 billion increase in your on-budget appropriation recommendation?

Ms. EDELSTEIN. We have proposed increasing this trust fund by an equivalent amount. In fact, some of the numbers we've talked about would bring even more money into the trust fund, so there would be more money available to be appropriated and would not have to come out of other budgets.

Senator LAUTENBERG. Do you want to just very quickly reconstruct how you get to $15 billion?

Ms. EDELSTEIN. Senator, I can certainly respond if we just break it down to the one year—I'm just sitting here trying to multiply.

We've looked at these annually. Certainly, we would expect to see a 5-year extension of Superfund taxes and so we would talk about it in a 5-year lump, but if we could talk about it in a 1-year, $3 billion for the year. We see that money coming from the existing Superfund taxes, which are chemical feed stock taxes of about $300 million, and petroleum tax of about $550 million. We would increase the current environmental income tax assessment from one-eighth of a percent to one-quarter of a percent, which gets you to about $1.2 billion.

Senator LAUTENBERG. That's what size companies?

Ms. EDELSTEIN. That is assessed alternative minimum taxable income in excess of $2 million. It's tied to your income size.

We also have suggested, in this overall context, that we are agreeable to a contribution from the insurance industry of $300 million.

Senator LAUTENBERG. How do you determine share?

Ms. EDELSTEIN. The insurance industry is talking about that among itself right now, and I think that we will be able to come up with that. The same thing with a line item from the small business community to make up for that gap that is currently not collected from them, in view of the cutoff on the environmental income tax. We've seen a line item suggested of $100 million. There are a number of ways to raise that—again, we can leave it to the small business community to talk among themselves. Whether it's a broadbased, small, flat fee or if they try to direct it to those industries which generate more hazardous substances than others, using some kind of a waste-end approach.

We would continue the existing States' share of 10 percent for fund-led cleanups, which would generate approximately $300 million, and we would increase somewhat the Federal contribution—the general revenues contribution—which is now at $230 million; we would increase it to $300 million.

Senator LAUTENBERG. Sounds like a tax-and-spender there. That's a lot of income tax that I'm not sure we'd get.

Ms. EDELSTEIN. That is correct, but the overall spending for this economy on Superfund will be greatly reduced. When you add up all of the transaction costs, plus what EPA is spending not just on cleanup but also on its own "enforcement budget"—which is a fundraising budget—along with what it actually spends on cleanup, there is over $4 billion a year coming out of the economy. So we end up, really, with a net savings to the economy, yet we get more money for cleanup because at the present time, we've only got about $2.2 billion going to cleanup.

Senator LAUTENBERG. There are other ways, however, to cure the high cost of transaction besides simply leveling a broadbased tax as a new way to finance this. There were suggestions that because of the polluter-pay concepts on the table, that people are being called environmental criminals. I come from the business community and I have never heard anyone referred to as an environmental criminal unless they have already, knowingly, made deposits of hazardous or toxic material and tried to walk away from it. But, other than that, that's not a general application that's used toward the business community.

My time is up. Don't go away, Ms. Edelstein.

Senator Baucus?

Senator BAUCUS. Thank you, Mr. Chairman.

I'd like to determine the degree to which the business community is willing to pay a new tax, if the Superfund program essentially has proportional liability, fair share concept, perhaps a cutoff on retroactivity—something along the lines that the business community generally is talking about. Each of the four of you, representing the business community, state here today that you are willing to pay sufficient taxes on your businesses, on your industry, to cover orphan share and to cover potential cutoff on retroactive liability.

Mr. REILLY. Senator, if you don't mind me starting out—I think the CMA proposal changes the current system the least. We don't have a cutoff date for retroactivity.

Senator BAUCUS. That's right. But, you're a fair share of administrative seating.

Mr. REILLY. Yes, sir. We've seen what EPA estimates as the orphan share under our "Fair Share" concept on an annual basis right now, and their numbers range $150–$400 million. We're going to conduct our own study. That number sounds about right to us—we're going to conduct a study and we hope it shows that the number is in that range. If it is in that range, one, we think there are efficiencies and Remedy Selection Reforms that can be made in the current program to offset that cost.

Senator BAUCUS. The basic question is that, assuming efficiencies are made administratively, and assuming further that the program is replaced with something similar along the lines that you're suggesting, are you going to say here today that you are going to assess your industry of whatever cost it takes to pay for the program?

Mr. REILLY. If there's a showing that more money is needed, we are prepared to support a modest increase in a broad-based tax like the corporate environmental tax.

Senator BAUCUS. Mr. McGavick? Very briefly—I have other questions.

Mr. MCGAVICK. I think I've answered that question. If there were real relief under coverage litigation, I've indicated there are two different proposals, one of which we favor—the elimination of retroactive liability. By that perspective, we would have that relief.

Senator BAUCUS. Assuming all that, assuming something similar to your proposal.

Mr. MCGAVICK. If that's true, yes, then we have already indicated our support for a tax.

Senator BAUCUS. And if it turns out there's insufficient dollars, are you willing to support some kind of an automatic additional assessment to cover it?

Mr. MCGAVICK. Again, you can't find insurance in the law. We are not the polluting industry. It would depend on the total size of the fund and our fair contribution to that—if it were fair and affordable and predictable, yes, we would.

Senator BAUCUS. Ms. Edelstein?

Ms. EDELSTEIN. I represent a number of individual insurers as well as to have the 1,700 supporters of this project. Included in those supporters are major manufacturers, middle size——

Senator BAUCUS. Basically, I know who you represent——

Ms. EDELSTEIN. The answer is yes.

Senator BAUCUS. Thank you. Mr. Cooper?

Mr. COOPER. Yes, Mr. Chairman, we would, with a caveat that the monies that are raised from such a fee or a tax be dedicated to Superfund cleanup and not go into a general treasury.

Senator BAUCUS. Mr. Reilly, why is a retroactive cutoff date not necessary in your view?

Mr. REILLY. Our big concern with having a retroactive date is that all the sites before that date would have to fall into a Government construction program, and we've had too many examples of the Government construction program to think that that money can be managed reasonably. We've got some sites that are very similar, where the Government is managing one site and PRP's are managing the other for cleanups, and EPA's numbers are three times what private industry costs us.

Senator BAUCUS. You think it would be wasteful.

Mr. REILLY. Yes, sir.

Senator BAUCUS. That private industry can do a better job?

Mr. REILLY. Yes, sir.

Senator BAUCUS. Mr. Reilly, I wonder if you could address the concerns that Mr. Pope had? One, he's concerned about reliable funding—that was his first concern. Could you address that, please?

Mr. REILLY. Senator, sites are largely being cleaned up now by the money of the big companies, and we don't plan to go away. I guess I see a reliable base remaining there, and the taxes have been coming in on a predictable basis, so I guess I don't see any letdown in the reliable income stream.

Senator BAUCUS. Then you're willing to commit here to a sufficient assessment of revenue to assure reliable sources?

Mr. REILLY. We're willing to manage the sites and we're willing, if shown to be necessary, to support a modest increase in a broad-based tax.

Senator BAUCUS. His second point is that the cleanup process might be slowed down with any changeover. That's a legitimate concern.

Mr. REILLY. We don't see any change in the cleanup process of sites where we're doing the work. We would continue to do the work—it's just that at the end of the day, there would be a fair allocation process. We want EPA to continue to have its Section 106 orders so that it can force parties to do work where that work must be done in a timely or accelerated fashion.

Senator BAUCUS. Mr. Pope, could you address that answer, please?

Mr. POPE. We believe that some of these proposals don't appear to us to actually deal with the transaction costs that are being discussed. I mean, there is the problem of the transaction costs between the insurers and the insured. It's not at all clear how simply allocating the share among the companies solves the disputes between the companies and their insurances, so it's not clear to us that some of these proposals get at some of the most important transaction costs, which are those between insurance companies and those of the insured.

We also are concerned that although people may be coming forward now and saying that they are prepared, in principle, to pay costs under certain contingencies—and we welcome that willingness—but when you actually get out there and start looking at what the costs are, and they may turn out to be larger than people expect, that we will get involved in the tax taffy pull that we have seen on a number of other issues recently. Most recently, I guess, with the effort to raise taxes to pay for the cost of reducing the tariffs associated with NAFTA, where people found it impossible to consider the idea of raising taxes. So, we think it's much more difficult to do this in the real world than it is to talk about this here.

Senator BAUCUS. Let me ask a silly question. I think most people are struck with the binding nature of your arbitration proposal—which is pretty tough. On the one hand, it helps assure certainty, once a decision is made.

Initially, your proposal has a lot of appeal. One could think that because of the binding nature that perhaps there would be more delays or costs—discovery, depositions—all that the lawyers on all sides would have to address, knowing that the decision by the Administrator, whoever he or she is, is binding. And second, knowing that the review standard is pretty tough—I think it's arbitrary and capricious, that you propose. Wouldn't that, arguably, slow things down a bit? Wouldn't that, arguably, raise costs—total costs, as transaction costs might be pretty high there, too?

Mr. REILLY. I expect all the companies to vigorously contest their share in the allocation process, but we've got, hopefully, an administrative law judge in there to manage that process, so we'll get an answer in the near term. Most of the companies that I talk to are tired of what we have now, which is no way to put to sleep the allocation issue. We've got sites that we've been working on for 10 years, and we can't figure out who pays what share. So, the rough justice that would be inherent in that process would have such value that we're willing to take our chance that we're maybe going to get an unfair hit at one site and, hopefully, that will balance with a benefit at another site.

Senator BAUCUS. What about Mr. Pope's concern that with your proposal, the orphan share might balloon—might become a lion's share, I think he said?

Mr. REILLY. We appreciate the fact that the numbers are soft right now. We don't see that as a concern. If, as more numbers are shaken out of the system, it turns out that the orphan share winds up being too large, we're flexible—we certainly don't want to leave that base uncovered.

Senator BAUCUS. Thank you, Mr. Chairman.

Senator LAUTENBERG. Thank you, Senator Baucus. Senator Smith?

Senator SMITH. Thank you, Mr. Chairman.

I see the frustration for us here, and for all of you. In fact, listening to so much different testimony, there's no consensus, really, which is a bit surprising, especially on the area of retroactivity. Considering, with the possible exception of Mr. Pope, it seems like there ought to be some consensus on retroactivity, which there isn't—there's certainly no consensus on allocation. So, it's very frustrating as we try to come up with an answer.

Having said that, let me start with a question to you, Mr. Pope. I think we would agree that under the current system, the Superfund cleanups are not moving as fast as we'd like—not moving very fast at all. The transaction costs are high—some would say out of control—and basically, that's due to a flawed scheme. Something has to be changed. Yet, as I listened to your testimony and read your statement, it seems to me that what you're prescribing is very little change. I'd tend to advocate dramatic change. I don't want to characterize something you don't mean, but it seems to me that your characterization is more like a band-aid on a severe wound. How could a program this flawed only need change with minor alterations?

Mr. POPE. Well first, you can have a small thing wrong with your car and it can break it. If you spend a huge part of your energy on these de minimis and very tiny contributors, you can, in fact, make the whole program fundamentally flawed and unworkable. And if you take those people out of the system—we believe for example, that only 140 Superfund sites at the moment, without taking out these small parties, have more than 50 or more PRPs. We believe that if you really work hard to get the small contributors out, that the number of sites with huge numbers of parties would be dramatically reduced. We also believe—and we did not testify about this and this is not our area, so I don't have specific proposals to offer—but, the insurance conflict, which is essentially a second level of the conflict, and unrelated to a particular party's share at a particular site, may need a separate fix, because that is apparently where about half of the transaction costs, according to testimony here this morning, results. We believe that if you go after that half of the transaction costs and the very large proportion that is associated with the de minimis and smaller contributors, that you can shrink the transaction costs down to a much smaller level. And, if you combine that with moving ahead more vigorously on selecting remedies on EPA's part, you can get this program both running faster and operating more efficiently.

Senator SMITH. One other question. You did identify three points—burdens for those of us who would want a more dramatic change. I agree with you on the third one, which you said was to deliver on the goal of more cleanup, not less. I don't think there's any dispute there. But, let me take the other two and ask for a response. In the first one, you said reliable funding sources must be identified. How can we identify what is reliable under the current system? What is a reliable funding source? We don't know the amount, we don't know the liability, we don't know what extent the cost of the cleanup may be—so how do we determine reliability?

Mr. POPE. Well, if we propose to eliminate certain portions of liability, we can at least make estimates of what that is going to pull out of the financing stream. Again, as I said, it's easy to design tax schemes to make that up and it may even be easy to get many of the industries affected to say here that they support those tax schemes. The question is, will the Congress enact them, will they be exempted from the budget caps, will the appropriations occur? There are a series of problems which, as I think Ms. Edelstein pointed out, might be good for the economy to do some of these

things in these ways, but it's not altogether clear that the way the budget process currently works, that that's what would actually happen in the real world. We are concerned about that.

In 1981, I wrote a book where I in fact advocated a public works-type solution to this problem. At that point, that was the path I thought we should have gone down. I now believe we've gone down this other course, and I am concerned about the great difficulties of trying to shift course in the middle of this program, and I'm also impressed by the fact that it appears—which I think you would find unsurprising, less surprising perhaps than I did in 1981—that private enterprise can clean these sites up for less. So, I'm reluctant to take that part of the benefits which CMA talked about out of the equation. So, you might lose as much on the cleanup costs as you save on the transactions if you turn this all over to a Government public works program.

Senator SMITH. Let me ask for a quick response to this, before my time runs out. On your second point, you said that the cleanup process should not be slowed, but is that necessarily true? If we prioritize the sites in a better way, in terms of what is truly an environmental problem, wouldn't that be preferable to cleaning it up just because it's there? I mean, isn't it a fact that some sites should be higher on the priority list—and are higher on the priority list? Is slow the issue?

Mr. POPE. We don't want to slow the process because people are trying to sort out the new liability regime. There are separate issues about the ranking process, the selection process, and the remedy selection process. Our concern is that some of the alternatives being suggested here today could create great uncertainty about what the liability regime would be at a particular site, and people might slow down action, even at high priority sites, because they didn't know what the new rules are going to be. That's our concern there. There may be sites on the list that deserve to have a lower priority than they do—there are undoubtedly sites not on the list that deserve to have a higher priority, and that is a separate problem which we believe you will also need to wrestle with in this reauthorization.

Senator SMITH. Fear or concern of slowing down cleanups already in the pipeline is not reason enough to avoid changing the liability scheme, though.

Mr. POPE. But it might be a reason to make certain that if you change to a new liability regime, that it is a clear liability regime which will not have that affect. I'm not saying that you can't do these things—I'm merely saying that I think the burden is on those who suggest them to identify how they will wrestle with these problems. I'm not saying this is impossible, I'm merely saying that we think the burden lies on the advocates of major change.

Senator SMITH. Last point. What did you say about retroactivity—did you support it or oppose it?

Mr. POPE. No—we believe that retroactivity is one way of achieving financing of this program, and we believe that it is the way which has been put in place. We don't believe it is intrinsically unfair, but we also don't have a theological commitment to it. We don't believe it's unfair, except that we believe all ways of doing this for the past sites are unfair.

Senator SMITH. Do you support retroactivity in the example that Mr. Cooper gave of when people were complying with the law, or thought they were?

Mr. POPE. If people were generating major hazardous waste problems in a way which was legal—and we're now not talking about Mr. Cooper's example, which I think was the sort of people who did very small things and didn't create major problems—but if people create a major problem in a legal way, we believe you can make a case that it is still appropriate to ask those people to pay for the cleanup costs, because there is no one more appropriate to ask. It may be unfair to them, but it's more unfair to anybody else. But, in the case where somebody made a trivial contribution—yes, we agree with Mr. Cooper.

Senator SMITH. Thank you. Mr. McGavick, in your testimony you indicated your support for the Treasury Department proposal. I must admit that I'm somewhat intrigued by it, but the big question is how we're going to pay for it. If we made changes in the program along the lines that you have suggested, what benefits would this provide for not only the insurance industry, but the industrial PRPs? Would this allow insurers to continue—would you be able to offer environmental insurance in the future with this kind of change?

Mr. MCGAVICK. Yes, we believe so, and that is one of the major benefits that come to the economy—if we could get to some kind of rational liability system. The joint, strict, several, and retroactive liability scheme currently in place absolutely prevents us from writing much environmental, except for specialty programs that are now just becoming available, but which are extremely expensive.

Senator SMITH. So you could reduce the insurance rates on the industry, do you believe? Is that what you're pledging here?

Mr. MCGAVICK. I have a few of my bosses behind me—I'm not sure I'll answer that question. But, I will tell you that in that being able to reenter, providing the function that we ordinarily provide to this society of privatizing and managing risk, we could reenter that in the environmental area, if you didn't have the joint, several, and retroactive system which meant that when we wrote a policy for one player at a site, we were writing it for all the parties at the site. That's not an insurable risk and we don't insure that kind of risk. We could reenter it if you change the system, yes.

Senator SMITH. Thank you. Well, Mr. Chairman, I see that my time is up, so I'll yield.

Senator LAUTENBERG. If you want a minute more to finish.

Senator SMITH. Go ahead.

Senator LAUTENBERG. We're joined by Senator Warner. Welcome.

Senator WARNER. Thank you, Mr. Chairman, and for bringing this important hearing. We have been fortunate to receive this morning some very provocative and interesting approaches to this difficult problem.

Mr. Pope, you said you didn't have a theological commitment about retroactivity. I do have a very strong theological opposition to retroactivity, not only in this area, but also in taxes. The Congress made a terrible mistake accepting that administration's proposal for retroactive taxes and, believe me, those of us in public life

felt the heat even though I and many others voted to repeal what they'd done a short time earlier. Retroactivity just cuts across the basic grain of fairness that people in this Nation feel should be applied to every walk of life. So, that will have an uphill battle, but I didn't mean to single you out, Mr. Pope—I thought you spoke very well on that subject. But you see, retroactivity just stifles the ability to buy and sell property. You don't know what you're buying or selling—you don't know what the liabilities are that may come along with it. We can't do that—that's basically unfair to these people struggling out here trying to make this private sector work, while the Congress keeps cranking out more and more regulations and laws. So, this is going to be an uphill battle, and I just wanted to sort of make it clear.

Having taken that strong stance, I appeal to each of you. We cannot back up from the cleanup momentum we have today. Where are we going to get the dollars? In a sense, it's going to fall on the taxpayers or fall on the industry. We must determine where the substitute dollars will come from—I and others who are successful in stonewalling the retroactivity.

Ms. Edelstein?

Ms. EDELSTEIN. We discussed in my testimony where the dollars could come from. There is one scheme that lays out building on the existing tax, under Superfund, that would raise the program to a total of $3.5 billion for cleanup. It involves using the existing oil and chemical feed stock taxes, increasing the environmental income tax from one-eighth of a percent to one-quarter of a percent, as well.

Senator WARNER. You've laid that out in your testimony already.

Ms. EDELSTEIN. That's correct.

If I may take a moment just to respond to those who have said today that we can't let changing retroactive liability slow cleanup down—it will not slow cleanup down. First of all, if funding sources are identified and they will be reliable, I think a tax base is much more reliable. Second, with respect to the transition, right now PRPs are under consent decrees. We propose that when one moves to a no-fault system, replacing retroactive liability, that as a condition of having that new no-fault system pick up the ongoing expenses under those consent decrees, that the PRPs currently running those cleanups would have to continue to run them. EPA estimates that 70 percent of the remedial actions are being instituted by PRPs now, so we have an existing system that will roll right along through reauthorization. It does not need to wait for the EPA rules to settle down and, in fact, even with respect to collecting reimbursement—the monies expended under that system—EPA already has regulations in place that deal with reimbursement.

I think that clearly replacing retroactive liability will get us more cleanup, not less—certainly one of Mr. Pope's important criteria—and that we can do it for overall less money.

Senator WARNER. Very interesting.

Mr. MCGAVICK. Senator, our testimony supports——

Senator WARNER. You need not repeat what I may have missed earlier. I'm in a House-Senate conference on the Armed Services, and just can't get up here full time.

Mr. McGAVICK. I can be very quick. Our testimony does endorse a similar financing scheme, and we agree with Senator Smith when he commented that he's surprised at the lack of uniformity among the corporate community on the elimination of retroactive liability. We're always mystified when people disagree with us.

[Laughter.]

Senator WARNER. That's the way I feel, too. Mr. Reilly?

[Laughter.]

Mr. REILLY. On that point, Senator, as far as the transition issue is concerned, as far as the funding is concerned, we think our numbers work. There would need to be no transition. The parties that are cleaning the sites right now would continue to clean them. We think that the best estimates of how much additional money would be needed to cover the orphan share—if any—fit easily within a modest increase in the corporate environmental tax.

Senator WARNER. Mr. Pope.

Mr. POPE. As I've indicated, I am in fact skeptical that Congress can put in place a replacement mechanism for substantial sums of money which is why, while I'm not theologically committed to it as a practical matter, I think the present system may not be so bad as reformed. But, we believe that if there was to be a reliance on a taxing mechanism, that taxing mechanism should be focused first on those parties who benefited economically from the activity which created the waste. I'm not calling them polluters—I'm just saying that they benefited economically on the activities which created the waste.

Senator WARNER. They're dead and gone, with respect to small business.

Mr. POPE. I've already indicated that I don't think that small business is really a very large part of this problem and I don't think small businesses should pay very much of the costs.

Senator WARNER. You better talk to some of those small business fellows that come in to see me.

Mr. POPE. In my testimony, I indicated that I thought EPA should be much more aggressive than it has been and I thought this committee might want to consider making sure that EPA is much more aggressive than it has been, getting rid of the de minimis and all that. I mean, I really do agree with you there. But, I also think that to the extent that the insurance industry has particular problems with this and is being relieved from certain of these possible liabilities, that it's obviously fair for them to pay part of the share. I mean, you ought to look at who the beneficiaries of the transition are and try to get the tax system to be allocated to those beneficiaries in a fair way which I don't think will be easy, but you'd have to try.

Senator WARNER. Mr. Cooper.

Mr. COOPER. Senator, I'm going to answer your question in a little bit of a roundabout sort of way. I'm struck this morning—I've never been in a PRP settlement, but I suspect it's very much like this, where you have all the major parties down here discussing how to carve up the pie, and the small business person is sitting down here at the end of the table just wanting the meeting to get over.

[Laughter.]

Mr. COOPER. The longer the meeting goes, the more we pay. Those meetings go 5, 6, 7 years. Please just tell us how much we owe and let us write the check and get out of the room.

Small business is making the Government a heck of a deal. There have been, since 1986, fewer than 200 de minimis settlements—less than 200, according to the EPA. So, there is no money coming in from the de minimis community right now—the small business community. Nobody is paying because they're being dragged out in these prolonged discussions where other parties don't agree. We have offered to pay a fee—I don't know what that amount is—we've speculated about $100 per company. There are 1.2 million small generators of hazardous waste in the United States. If you just applied that fee to them, that would raise over $100 million. That's far more than the Government's taking in now. So, we're certainly willing to put that money up.

Senator WARNER. Well, one last observation. One of the many advantages of membership on this committee is that you do meet a lot of interesting people and I have recently met a number in the small business community who are engaged in scrap and recycling. They're doing a remarkable service to the community by trying, in some manner, to bring back a lot of this waste scattered all over the countryside and funnelling it back into raw material. And, they're doing it in a responsible way. Their bottom line is that they're trying to make a buck or two on it, but if we keep jumping up and down on them and putting something like this retroactivity on them, they're out of business. Nobody else is going to come along and pick up all this scrap on the roadsides and the dumps, and try to put it back into the mainstream of raw materials.

Senator LAUTENBERG. Thank you very much, Senator Warner.

Ms. Edelstein, I wanted to get back to a point that we were at before. You talked about the sources of revenues that might be offered as a substitute for the present system, and you and Mr. McGavick suggested a way that it could be done. But, that doesn't automatically get translated into funding for Superfund because we have such things as budget caps. We can do one thing on the authorization level, but we have to do something else on the appropriations level, unless we make this an entitlement program and, at the same time, release the expenditures for the Federal Government. So, I just want to be sure whether that's what you're recommending—that we lift the total expenditures cap or do we make this an entitlement program? Because otherwise, it is going to compete with the various departments that I outlined to you before—the Veterans Administration, etc.

Ms. EDELSTEIN. I'm afraid I'm not enough of an expert on how the budget process works and I'd like an opportunity to respond in writing. But, let me just say what our intent is, and that is that we would put more money into the Superfund trust fund and do whatever we have to do to make sure that that money is available to be spent on cleanup. As parties who contribute to an increased trust fund, we want to be sure that that money is going to clean up. Certainly the insurers want to see that sites are cleaned up. We don't want the public left at risk as a result of these sites, we don't want to see another wave of litigation. We'd be happy to work with you

and work with the entire committee to fashion a way to make sure that in fact the money is available.

Senator LAUTENBERG. We'd appreciate your doing that review and submitting to us your comments on that.

You have six organizations that you list on page six of your testimony, that specifically endorsed your tax increase numbers. Is that fair to say?

Ms. EDELSTEIN. Those were the people who were involved in the meetings to come up with laying out that plan, that is correct.

Senator LAUTENBERG. Because you talked about the number 1,700—are they separate businesses?

Ms. EDELSTEIN. Yes. As requested, I have with me today a list of the supporters of the National Environmental Trust Fund Project. They have all agreed to pay additional taxes and we have, in fact, informed them of this proposal and they continue to support our project.

Senator LAUTENBERG. So, have they specifically endorsed it or are they simply giving you their proxy and saying that whatever you guys suggest is OK with them?

Ms. EDELSTEIN. They have said all along, in supporting the project, they have all along supported replacing retroactive liability with a broadbased fund paid for by business. They have always been willing to step up to the plate and tell us to find another way to fund Superfund.

Senator LAUTENBERG. So, they've been told and it's been said to them that it may cost them a quarter or an eighth of a percent more on their income and asked if that would be OK with them?

Ms. EDELSTEIN. Well, I would have to go back and review to see if, in fact, the last mailing to them was an actual poll. I would not want to overstate what the situation is, but I can say, without a doubt, that this is something that I'm very comfortable saying would be supported by them. And, I would also say that this particular funding scheme, and others that are based on that same principle, that are outlined in that funding scheme, have been discussed by a wide range of businesses represented in Washington, DC. It is not simply those that we have enumerated as the ones who were in the room trying to develop a consensus for a funding proposal.

Senator LAUTENBERG. Yes. They've been consulted. Did they agree?

Ms. EDELSTEIN. Yes. Oh, yes.

Senator LAUTENBERG. So they fully support it.

Ms. EDELSTEIN. Yes.

Senator LAUTENBERG. You suggested that the NAACP supports your proposal, but the NAACP envisions a cleanup program as high as $4.5 billion per year. Now, you have the support of the six groups that you list on your testimony—they'd be paying, based on the estimate you gave, $3.4 billion. Even if you get a lot more support from others, who would pay the additional $1.1 billion worth of taxes that the NAACP would like to see?

Ms. EDELSTEIN. Well, if you looked at the eight-point plan that Dr. Chavis was involved in generating, there is a range of the money that is needed and that is $3.5 to $4.5 billion annually. That

range is something that we are all comfortable with and, in fact——

Senator LAUTENBERG. So, you would you go up to the upper limit—you'd find a way to finance the upper limit if you had to do it?

Ms. EDELSTEIN. It's a question of how much money we actually need for this program. In fact, already I've laid out for you funding for about $3.2 billion.

Senator LAUTENBERG. It's only a billion insurance.

Ms. EDELSTEIN. No, there's more money, because that is trust fund money. In addition, single party cleanups would continue to go on, so you've already got another $550 million that would be a part of the program, that moves you up to $3.7 billion. In addition, EPA currently spends about $200 million on enforcement—we estimate that at least $150 million of that would be eliminated by taking them out of the fundraising process, so that gets us another $150 million. We believe there are other savings in their general overhead budget as well, because there are a number of costs incurred by the Government as a result of the use of a liability-based system in terms of additional testing, overtesting, litigation-proofing one's evidence, as well as studying more options than may be necessary, as acknowledged in the 1989 EPA 90 day report.

Senator LAUTENBERG. The NETF project is financed how?

Ms. EDELSTEIN. The financial supporters are the insurance companies that I listed for you.

Senator LAUTENBERG. Is there one or more major, or are they all about equal?

Ms. EDELSTEIN. They're all about equal.

Senator LAUTENBERG. How many contributors?

Ms. EDELSTEIN. American International Group, Firemens' Fund, Crum and Forster, Continental Insurance Company.

Senator LAUTENBERG. Have all of those held fast through this? Are they all, as far as you know, currently supporting the project?

Ms. EDELSTEIN. Absolutely. A number of my CEOs were in town just last week.

Senator LAUTENBERG. And there is no dominant funds provider in the group?

Ms. EDELSTEIN. No, there is not.

Senator LAUTENBERG. I would ask you to review the record and submit, for the record here, the percentages of contributions and what it's based on—is it based on corporate revenues or profits or whatever. We'd just like to be sure.

The insurers are claiming that they face crushing liability of tens or even hundreds of billions of dollars under Superfund—that's why we should help them. Your proposal has insurers paying $300 million per year to get out of that liability. Is that a fairly inexpensive proposal, based on what the insurers might otherwise face? We heard someone here say that their litigation—Mr. Reilly—is primarily against the insurers to get them to own up or to honor their commitment, to cover the liability.

Ms. EDELSTEIN. Let me start by saying that by describing this as getting insurers to honor their commitment—I think it's most important to say that there was no commitment to provide this coverage. Just as PRPs in 1960 or 1970 could not have anticipated—and

I don't think that anyone suggests that they anticipated Superfund to clean up obligations——

Senator LAUTENBERG. Can we confine the response to the question, please?

Ms. EDELSTEIN. Well, with a provocative statement like that, I'm sorry, I feel compelled to respond but if you prefer that I not, I will honor that.

Senator LAUTENBERG. I'd prefer that you not.

You said that the insurers claim that they might face a liability of tens or hundreds of billions of dollars. Your proposal has insurers paying $300 million. Just tell me how that adjusts, please.

Ms. EDELSTEIN. I think it was Mr. McGavick who described what the potential insurance concerns with respect to dollars.

Mr. MCGAVICK. I'd be happy to respond to your question, Senator.

The number that is in these various proposals of $300 million per year, we think, reflects a fair portion to fall on the insurance industry. To say that there is a grotesque possibility out there that could swamp this industry is not, therefore, to say to let's try and capture all of that money through taxes. That would simply be putting our bankruptcy on schedule.

Senator LAUTENBERG. So, what we're doing, then, is simply making sure that somebody gets out of this and that they've capped their liability and leave the rest to the taxpayers to catch.

Mr. MCGAVICK. We don't have any liability. We have, sometimes, a coverage dispute that results in us losing. That's a different and quite important distinction.

Senator LAUTENBERG. Mr. Reilly, what do you think? Is there some liability that these folks might have?

Mr. REILLY. We have our disagreements with the insurance industry, Senator, and often they fall down to obscure interpretations of contracts, but certainly in a lot of jurisdictions, the older comprehensive general liability policies have been found to cover environmental impairment and that's why we're pursuing our carriers—we feel we owe it to our stockholders. We certainly do not enjoy suing our insurance carriers.

Senator LAUTENBERG. My time is up. Before I turn the mike over to Senator Smith, I would just make an observation and that is about retroactive liability because as a nonlawyer—I come out of the corporate world; I ran a pretty good size company—the notion of retroactive liability has been kind of a disturbing thing. But, I grew up in a city called Paterson, New Jersey. Paterson was the home of significant asbestos manufacturing and people that I know, that I went to high school with, died many years later, having worked part time in the asbestos factory, of lung cancer—very young—early 40's, typically a 20-year gestation period or something like that. Lawsuits were brought, claims were settled. There was no law at the time that one couldn't manufacture asbestos. There wasn't anything identifying—there may have been some obscure reference in some files that go back to the middle 1930's—but the fact is, people continued to make this material and employees often had their health damaged as a result of that exposure. There is something that I'm told—again, as a nonlawyer—that there is a reference in common law that says "thou shall not foul

thy neighbor's pond," so there is a basis in experience for retroactivity. I'm not condoning it—I'm simply saying that you can't wash it out as if this is some new idea that's come along. It isn't at all. Whether it's right or not is a question we're going to try to deal with, but it's not unusual.

Anybody disagree?

Ms. EDELSTEIN. Actually, Senator Lautenberg, I do.

Senator LAUTENBERG. We've gotten good at that.

[Laughter.]

Ms. EDELSTEIN. Yes. Well, it's delightful to be here.

What you describe, when you describe the common law—you were certainly right—in 1930, 1940, or 1950, when those products were manufactured, those manufacturers were going to be subject to the common law.

Superfund, in 1980, made a dramatic change in the common law. In 1980, it wiped out the third party defense, retroactively. One of the sections of section 107, which lays out the liability scheme, says that the only time that you can assert, as a defense, that someone else's conduct is responsible for the damages—in this case, the need to do cleanup—was limited by Superfund to only those third parties with whom you do not have a contractual relationship. I think it may have looked insignificant at the time, but it is extremely significant because it suddenly meant that every generator could no longer assert that defense, which they would have had for their activities, if they had been reviewed under a common law liability standard in 1970, in 1975—up to 1980. It is a very, very different situation than the one you described.

Senator LAUTENBERG. The Constitutional question about whether retroactivity was applicable was reviewed, I assume, in the courts.

Ms. EDELSTEIN. I'm sorry, I'm not familiar with all those cases. Maybe Bernie is.

Mr. REILLY. Senator, a lot of industrial companies challenged the retroactivity and those cases were uniformly lost. The law has been held to be that retroactive liability is the rule.

Certainly, my company is not real happy about going back and reaching for problems that were created 30, 40, 50 years ago, and if we were writing on a blank slate, there probably is a better way to go about this. But right now, we've got the learnings of the last 10 or 12 years and I would say that on that particular issue, what private industry has learned on our ability to manage contractors and our ability to control costs, is the driver of why we are not aggressively attacking the retroactive liability portion of the law.

Senator LAUTENBERG. Thank you. Senator Smith.

Senator SMITH. Just a brief comment as to what the Chairman said. As terrible as these problems turn out to be, as evidenced in your example of the asbestos situation, the truth of the matter is that there was a great public demand for asbestos—companies don't produce products unless someone is demanding to purchase it. In many cases, there was a great deal of lack of knowledge of the damage. I think to go back and make these people criminals is not productive in terms of what we need to do for the future. That's just a personal opinion.

Senator LAUTENBERG. I've got to respond by asking you whether or not people wanted asbestos or did they want brake lining? Did

they want insulation or did they want asbestos? I didn't know that people were clamoring for asbestos.

Senator SMITH. Well, I didn't know that they were producing a product that they thought was going to kill people, either, Mr. Chairman. I'd certainly disagree with that characterization. I don't think any company produced a product back in the 1930's, that they felt was going to harm health, intentionally. I think we find these things out in an evolutionary process. I think it's a very, very strong statement to say that people——

Senator LAUTENBERG. I'd be happy to supply to you company records that were uncovered in 1935.

Senator SMITH. If that's the case, I would agree with you—if that documentation is provided—but, I don't think that's the case in the vast majority of the people who were involved in the joint and several liability issue of Superfund. That may be the case in some cases, and I would agree with you in those cases where that happened—they ought to be identified, they ought to be criminally prosecuted, if that's the case, and move on. But, they should not be holding up this whole process of cleanup.

Let me just say that in terms of all the witnesses, your responses are good. You don't hesitate to speak out. I think it's a good dialog. You should not be intimidated by us here—and you're not.

[Laughter.]

Senator SMITH. And I commend you for it. As long as none of you are living in New Hampshire, maybe you'd want to consider running for the Senate.

[Laughter.]

Senator SMITH. I want to jump around three or four different points here. Let me go back, first, to Mr. Cooper. I understand what you're saying, and I agree with what you're saying in terms of small business—these de minimis situations where you'd like to find out what your liability is, write your check, and get out of the room—I think that is going to be a change, I believe that's going to happen.

That's fine when you're in the room with a lot of other PRPs who are much larger than you are in terms of responsibility and perhaps assets, as well. But, we've got examples in New Hampshire where small businesses might be the only PRPs, and we're still having the same battle, only on a smaller scale. So, it's not always that you're just in the room with giants, but sometimes you're in the room with your own colleagues and we still can't get a settlement.

You can answer, if you like. Basically, how do we deal with that situation? Then there's also the time when not only is it just all of you—everybody being de minimis—it's also a case where there is a percentage, where you may be 50 percent of the problem, 30 percent of the problem, or 75 percent of the problem, or whatever. You can respond to that, if you like, but I'm just making that point that that's one of the things that makes it difficult to be able to resolve what you're getting at.

Mr. COOPER. Senator, we'd certainly agree with you that that's difficult. This is a personal comment—I've always believed in providing adequate discretion to the agency to be able to deal with unique circumstances. I think one of the problems we have in the

law is dealing with absolutes on these things—if you're at this point, you're OK and if you're at another point, you're not OK. I don't believe in those kinds of absolutes.

Having said that, if you've identified a single party to a site and that party has 50 employees, it's very unlikely that you're going to recover a great deal of money from that company to clean up the site, anyway. That odd case where it is a multiparty site, but you've only identified one of them—I'd also think, just for clarification—what we're talking about here would not apply to single-party sites. If you own the site and the waste that is having to be cleaned up is your own waste, we feel strongly that the company there should be responsible for that cleanup.

There are other problems that go into the small business issue that we didn't have time to address and some of these, I frankly don't know how to deal with, but I think they ought to be considered. One of the biggest problems that small business has, in dealing with Superfund sites is that in many, many cases, they were dealing with reputable, licensed owners of sites and they were dealing with reputable, licensed carriers of waste. Sometimes those reputable, licensed parties didn't do the right thing. They took that waste and either took it somewhere else or handled it in a way that was not in accordance with the practices that were identified.

We were told constantly that small businesses should go out and examine the waste sites. We've got a case in Los Angeles right now where we've got 80 companies involved in a waste site in Mississippi. It's unlikely that those companies are going to fly to Mississippi to examine the waste site. It's also going to be difficult for them to fly out there to be part of the settlement. We don't have a mechanism right now to get at the company that does not behave right in the process which, in turn, triggers the liability for the generator of the waste. So, there are other things that have to go into this other than simply identifying the parties at the site.

Senator SMITH. Let me ask Ms. Edelstein a question.

I certainly recognize that if we moved to a proportional liability system, we were going to create more orphan shares and that funding was going to have to come from somewhere. Is it true that if joint and several liability were eliminated, which you suggest, where do you see—other than lawyers' fees—where do you see transaction costs being saved?

Ms. EDELSTEIN. Senator Smith, with all due respect, may I suggest that Bernie Reilly answer that question?

Our position is that we're silent on the issue of whether it should be joint and several or proportional. We want to replace retroactive liability so that we don't have to decide how to handle small parties and how to handle big parties. Let's just make the money available and get on with the cleanups.

Senator SMITH. OK, let me ask Mr. Reilly that question.

Mr. REILLY. What happens right now is that the transaction costs come from primarily two sources. One is when we have to sue the other parties at the site, that the agency didn't sue, in order to bring in contributions from all the parties at the site. Those are extremely long, extremely protracted, extremely expensive—so, that's one source of transaction costs. That process would be all displaced

and put into the administrative law judge proceeding in our proposal.

The other thing that happens currently, under allocation, is that we never can put the darned thing to bed. It limps along as a drag on the process, year after year after year. We've got no way to say when an allocation is final, so the same issue comes up at meeting after meeting after meeting—the same 20 to 50 lawyers come to meetings for years on end. We would love to put an end to that process, and we think if we had this administrative law judge we could do that.

Senator SMITH. I frankly am surprised at your position on retroactivity. I think it has been pretty well noted here.

I realize, and I think others do—and certainly people in your industry do—that you've spent a lot of money within your industry in conjunction with EPA and Superfund, dealing with cleanup or participating in cleanup sites beyond 1980, so you've got an investment there and that's probably your motive, but I just don't see how that resolves the problem in the future. I mean, did you cost this out? Are you convinced that in the long run it's going to be better for you to continue with retroactivity than it is to get some definitive nature to this thing?

Mr. REILLY. Absolutely yes. We see that we can probably cut the costs in half or more, and if those costs must be borne by the Government, the Government is going to turn right around and drag them out of our hide in the form of taxes. So, on a net basis, there's no question—we're better off staying involved in the sites and doing the remedies cost effectively.

Senator SMITH. Well, of course the term "the Government" is thrown around very loosely around this place. The Government is all of us—all 260 million of us. We all pay taxes in one form or another—some of us in many forms.

I've come to the conclusion that in terms of fairness, as far as retroactivity, I think we may have to look beyond our own selfish positions here on that and move to look where we're going to be most productive and cost efficient in getting the job done.

I have no more questions—I just want to make this point—I have not concluded, by taking the position on retroactivity that Ms. Edelstein have taken, I don't conclude by that the burden of the orphan shares are going to fall necessarily 100 percent on the chemical industry or any other business. I haven't concluded that, nor have I concluded that it's going to fall on the taxpayers. I think we have to look very carefully at a lot of options—we certainly ought to look, I think, more at risk assessment, prioritization, stretching out some of these costs—and stop the squabbling in the courts over whose responsibility it is.

My question, going back to you though, Ms. Edelstein, was that I think there are a lot of areas where costs can be saved in this regard which can be placed into that fund, that's not going to come out of taxpayers, that's not going to come out of the industry, but is going to come simply out of the savings that industry and taxpayers are going to wind up paying anyway. So, the bottom line is that I think it's going to be less, rather than more, in terms of that.

You can respond if you like, Ms. Edelstein.

Ms. EDELSTEIN. You're absolutely right, Senator Smith and certainly with respect to some of the dialogs that are going on regarding the cleanup standards and trying to make those a little more rational, we can see some real savings. Not to mention the transaction cost savings.

Senator SMITH. Thank you.

Senator LAUTENBERG. Thank you very much. We'll close on an acrimonious note.

[Laughter.]

Senator LAUTENBERG. I don't think I accused any of those companies of deliberately killing people—except the guys who had a record of it. Whether the illness resulted from an innocent act or a deliberate act, the fact is that people died from a work environment that induced types of cancer, and there were lawsuits held and claims awarded based on nothing more than common law—which said it's OK to go back—even though there was no law against the production of asbestos at the time.

So, that was my statement, just to clear the record. With that, I thank you very much for your testimony. The harshness of the tone doesn't at all indicate disagreement—that's my normal speaking voice.

[Laughter.]

So, I thank you very much for being with us today. Your testimony was excellent, really.

We would now ask the next panel to come up, please.

If we could ask those leaving to do so quietly and quickly. We have on the next panel the distinguished Attorney General of the State of New York. The fact that we're friends, Mr. Attorney General, should in no way interfere with an acerbic dialog. We're happy to have you here. We have Mr. Keith Fultz with us from GAO, and Mr. Lloyd Dixon from the RAND Corporation.

As the rules go, because of the shortness of time, we allow 5 minutes for the oral presentation, and we'll have your full written testimony introduced into the record.

With that, I would ask the Attorney General of the State of New York to give his testimony. Welcome, Bob.

STATEMENT OF HON. ROBERT ABRAMS, ATTORNEY GENERAL, STATE OF NEW YORK, ACCOMPANIED BY JAMES SEVINSKY, ASSISTANT ATTORNEY GENERAL, STATE OF NEW YORK, NEW YORK ATTORNEY GENERAL'S ENVIRONMENTAL BUREAU

Mr. ABRAMS. Thank you very much Senator Lautenberg, Senator Smith.

Seated to my right is Jim Sevinsky. He's the Assistant Attorney General in charge of the New York Attorney General's Environmental Bureau, and has very good expertise and hands-on experience dealing with the kinds of issues that are the subject of today's hearing, over a long period of time.

Mr. Chairman and members of this subcommittee, I thank you very much for the opportunity to testify about the critical importance to the States of retaining CERCLA's strict, joint, and several liability standard.

For over a dozen years, States have played a critical role in cleaning up toxic dump sites, both in partnership with the Federal Government at sites on the National Priority List, and at thousands of other sites that have been identified by the various States. Our ability to compel responsible parties to apply remedies to this huge number of hazardous waste sites would be seriously undermined if Congress were to weaken CERCLA's liability standard. That standard is central to the Federal-State partnership in addressing toxic cleanups, and to the States' own power to protect our interests in public health and a clean environment.

When I became Attorney General nearly 15 years ago, in January of 1979, Love Canal had just been declared a public health emergency by New York State after toxic chemicals were found leaking into homes and surfacing onto a school yard. Government was suddenly forced to confront the legacy of public health and environmental threats posed by toxic waste dumps in communities all across the Nation. In response to these massive problems, the Attorneys General of the States dusted off and creatively applied ancient common law principles in the effort to hold the responsible entities legally accountable.

In New York, our office brought the Love Canal case—one of the first State lawsuits in the Country involving a hazardous waste landfill. We had to rely on good old-fashioned public nuisance law, little used in modern times, in order to find a legal remedy for the Love Canal disaster. As a result of these efforts, courts began to apply the principles of common law, such as public nuisance, with its strict, joint, and several liability standard.

Without a Federal statute, the States would have faced an arduous, case-by-case battle to impose the common law, and 50 piecemeal State statutes dealing with these environmental disasters. So, Congress' passage of CERCLA in 1980 was timely and was essential.

The very heart of CERCLA is its standard of strict, joint, and several liability. States have been able to rely heavily upon this standard to recover remedial costs from responsible parties. As a result, CERCLA's standard is now assuring the cleanup of thousands of sites nationwide, including many State sites that are not on the NPL.

National Priority List sites, to be addressed by EPA in partnership with the States, make up a small portion of the total sites requiring remediation, albeit some of the most serious ones that we have in the Nation. Only 82 sites of the 760 currently scheduled for remediation in my own State of New York are on the NPL. New York and other States have pursued dozens of legal actions and secured court and administrative orders—many on consent—committing responsible parties to carry out several hundred million dollars' worth of remedial actions at NPL and non-NPL sites alike.

Approximately 65 percent of the sites needing cleanup in New York are being addressed by the responsible parties, and some EPA estimates are 70 percent for NPL sites nationwide.

These cleanups would never have taken place without the strict, joint, and several liability standard of CERCLA. Congress, therefore, should not seek to reverse this progress be eviscerating the liability standard which has permitted it. If Congress were now to

impair this important National liability scheme, it would seriously undercut State and Federal enforcement efforts.

The National Association of Attorneys General has adopted a resolution firmly supporting retention of the strict, joint, and several liability standard under CERCLA. I'm here today on behalf of the Association, as well as myself. I would add that the National Governors' Association and the Association of State and Territorial Solid Waste Management Officials have similarly passed firm resolutions in favor of retaining this vital standard. We believe that the CERCLA standard provides a sound and vital basis for our enforcement efforts. We also believe that, by and large, our enforcement efforts are working.

Chemical and insurance industry interests urge profound legislative changes which are unnecessary to address any of the problems which may exist with the current process. Instead, such unwise changes will simply serve to subvert the polluter-pays principle and will lead to more protracted legal struggles over liability before remedies are ever implemented.

We must recognize that some improvements may be needed to make the process work more efficiently and effectively—clearly so. Much can be accomplished, though, simply by using existing law and by making some procedural changes.

For example, EPA could streamline the de minimis settlement procedures already in the statute to facilitate earlier settlements and buyouts. Program changes that should reduce transaction costs considerably are already under active review by EPA's joint Government, industry, and environmental organization working group on the Superfund evaluation.

I emphasize, however, that improvements can be made to CERCLA without altering the statute's liability standard. Indeed, if this critical concept, which is at the core of CERCLA, is tampered with, I think it's likely that voluntary settlements and cleanups would come to a near halt, imposing enormous burdens on Federal and State environmental enforcement agencies and leaving the toxic time bombs in our communities unremedied.

So, I appreciate very much the opportunity you have afforded me to present this important perspective.

Senator LAUTENBERG. Thank you very much, Attorney General Abrams.

Now we'll hear from Mr. Fultz.

STATEMENT OF KEITH FULTZ, DIRECTOR, PLANNING AND REPORTING, GENERAL ACCOUNTING OFFICE, WASHINGTON, DC

Mr. FULTZ. Senator Lautenberg, Senator Smith, I appreciate the opportunity to discuss EPA's use of the tools authorized by the Superfund laws for reducing transaction costs. As you know, these tools include de minimis settlements, nonbinding allocations of responsibility commonly called NBARs, mixed funding agreements, and alternative dispute resolutions called ADRs.

In summary, GAO has found that EPA has made little use of these settlement tools. Out of about 1,100 non-Federal sites, EPA had completed de minimis settlements at only 73, prepared NBARS at 5 sites, arranged mixed funding at 16, and employed alternative

dispute resolution techniques at only 35 sites. In fact, the chart to your right illustrates, by region, the use of these tools by all ten of EPA's regions. If you'd notice, regions 1 and 5 account for one-half of all de minimis settlements, and regions 1 and 5 did most of the ADRs. Seven of the regions have never issued a NBAR.

The reason these tools have not been used very much, quite frankly, is because EPA has been concerned with getting cleanups under way as quickly as possible and has viewed them as drawing enforcement actions away from the actual cleanup. However, following widespread complaints about high transaction costs, EPA has begun to give settlement tools higher priority and we're very glad to see this. Further action is needed, however, to make transaction costs an integral part of the agency's operation. Simply put, the culture of the agency is such at this time that they're not placing emphasis on these tools.

Mr. Chairman and Senator Smith, since the Congress provided these tools for EPA to expedite settlements—about 7 years ago, actually—the agency has done little to promote their use, as I think our chart shows, and has not placed emphasis to reduce transaction costs. I think, though, the actions of the past year and particularly within the past few months, EPA has paid more attention to controlling these costs. In June—I think to its credit—plans were announced for overcoming many of the obstacles that minimize their use. For example, EPA set goals and required regions to identify candidates for de minimis settlements—something that had not been done before. They also have announced pilots to explore the use of ADRs and NBARs, and plans to reexamine possible roles of mixed funding and mixed funding procedures.

The EPA actions are evidence of a new concern for controlling the Superfund transaction costs, but whether they will bring down the costs significantly will depend, frankly, on how well EPA manages full implementation of the effort. As I've said, the culture just isn't there right now.

Before EPA can make more effective use of these tools, it needs to change this enforcement attitude or the culture, and it also needs to let the regions know that they're going to be held accountable for using these tools more effectively than they have in the past. To do this, EPA needs to systematically determine when they can be used—that's something that has not been done yet. They need to create, as I've mentioned, regional accountability for their use. They need to target resources for their use, and they also need to review the administrative procedures that are in practice. And, they need to make affected parties more aware that these tools are available.

Mr. Chairman, you also asked us for our comments on proposals to eliminate retroactive liability in the Superfund program. These proposals, in effect, turn Superfund largely into a "public works" program. Although we have not studied these proposals in great detail, in our view they are not well justified for a number of reasons. First and foremost is the fact that we believe that it's premature to call for elimination of the current enforcement actions when the tools designed to reduce transactions costs have not really been tried effectively by EPA and its regions.

In addition, proposals to abolish retroactive liability have several other disadvantages, some of which we've already heard here this morning. We believe they would break the link between responsibility for contamination in cleanup that the present polluter-pays concept has. We also believe that it would increase fund expenditures and that they would remove incentives for voluntary cleanup that the present retroactive system has.

After the last witness provides his testimony, I'd be glad to respond to questions. Thank you.

Senator LAUTENBERG. Thank you very much.

Mr. Dixon?

STATEMENT OF LLOYD DIXON, RAND CORPORATION, SANTA MONICA, CALIFORNIA

Mr. DIXON. Mr. Chairman and members of the subcommittee, thank you for inviting me to participate in your hearings on the Superfund program. My name is Lloyd Dixon and I'm an economist with RAND.

I base my comments today on several RAND reports, including a report that we are releasing today. Our research attempts to measure the transaction costs generated by Superfund's liability approach. Transaction costs are related to the assignment of liability among the parties involved at a site, as well as their insurers. Today I will summarize what we have learned about transaction costs, how transaction cost share varies by firm size, and what reforms might be considered to reduce transaction costs.

This chart summarizes what we have learned so far about transaction costs at Superfund sites. I'll first talk about transaction costs through 1991, in this column, and the second column tells us the projection of what transaction costs will be at completion of cleanup.

We estimate that the PRPs at Superfund sites spent about 32 percent, or $1 in $3 dollars on transaction costs through 1991. Let me just point out that there's a lot of uncertainty around these numbers, but these are currently our best estimates. PRPs often turn to their insurers for reimbursement of their cleanup and litigation costs, as we've heard this morning. We estimate that approximately 88 percent—the overwhelming majority—of insurer expenditures are for transaction costs. About half of those are to defend their policyholders and the other half are to contest whether their policies cover these claims.

If you look at total private sector expenditures, which are the sum of PRP expenditures and insurer expenditures—once you take care of double counting and the like—we estimate that overall, through 1991, the private sector spent about 35–40 percent of their outlays on transaction costs.

Now, our research suggests that transaction costs tend to be loaded toward the front of the cleanup process, so transaction-cost through 1991 may not be a good indicator of what they will be when cleanup is complete. As you might imagine, there is a lot of uncertainty in predicting what transaction-cost share at completion will be. Scenarios we ran for PRPs result in transaction-cost shares between 19 and 27 percent at completion, with the likely share for

the PRPs at the upper end of that range. Insurer transaction costs at completion we estimate at 69 percent. So, for total private-sector transaction costs, when these cleanups are complete, we estimate transaction costs will be 25–35 percent, perhaps 5–10 percentage points below what we've observed so far.

What I've told you so far is overall PRP transaction costs, but one of the things we've found is that there is a tremendous variation in the transaction costs by the size of firm involved in the process. We've divided firms up into five categories, depending on their 1991 annual revenues. On the top row here are firms with annual revenues over $20 billion. On the bottom, firms with annual revenues of less than $15 million. We have found that for firms with annual revenues of over $100 million, that their transaction costs ranged, through 1991, from 15–19 percent. In stark contrast, we found that the transaction-cost shares for firms below $100 million averaged 60 percent.

Now, our research suggests that it's not firm size itself that's so important, but rather the firm's volumetric share at the site. Smaller firms tend to have smaller volumetric shares, and firms with small volumetric shares are the ones with high transaction costs. The reason behind that is that there appears to be a kind of fixed cost of defending yourself at a Superfund site, and firms with small volumetric shares, or a small proportion of the waste, simply do not make the cleanup expenditures to offset those costs.

Let me conclude by saying that our work has demonstrated that Superfund has induced considerable transaction costs and raises doubts whether Superfund's liability approach, as currently implemented, is an efficient way to clean up the Nation's hazardous waste sites. Whether these transaction costs can be justified depends on the benefits of the liability approach, such as voluntary cleanups and site discoveries, what alternative approaches are possible, and the transition costs of moving to an alternative approach.

Within the context of a liability approach, there are a number of reforms that could be considered that may reduce transaction costs. The outcomes of all these reforms are uncertain, and they all have drawbacks. Possible reforms include the following:

Enhanced de minimis buyouts. Our research suggests that PRPs with small volumetric shares spend more on transaction costs than they do on cleanup. One way to reduce these transaction costs may be to remove these parties from the cleanup process as soon as possible. The drawback to enhanced de minimis settlements would be that either the PRPs remaining at the site or the Government would then bear increased risk of cost overruns or failed remedies.

Proportional liability. PRPs we have interviewed frequently tell us that they are willing to pay for their share of the waste at the site, but will fight against paying someone else's. A PRP could be required to pay only for its share of waste at the site, and the Government could pick up the orphan share. Government funds, however, would be needed to cover these orphan shares.

Arbitration mechanisms for allocating liability. PRPs currently allocate liability among themselves and PRPs incur substantial transaction costs in the process. By substituting an arbitration or other non-litigative process, perhaps under Government aegis, it

may be possible to reduce these transaction costs. Experience has shown, however, that the success of such programs depends critically on how well they are designed and implemented.

What I call de maximis buyouts. Many PRPs with larger volumetric shares tell us they are willing to pay for their share of the cleanup, but because they are never released from liability of the site, they have reduced incentives to settle. Provisions that allow these PRPs to buy out of a site, even at a considerable premium, could encourage settlement and decrease transaction costs. The drawback of this reform is, again, that it would transfer risks for cost overruns and remedy failure to the remaining PRPs or the Government.

Relaxed cleanup standards. PRPs frequently fight against what they perceive to be overly stringent cleanup standards or unnecessarily expensive remedies. This produces substantial transaction costs. It is likely that less stringent cleanup standards and less expensive remedies would reduce these transaction costs. The savings in transaction costs, however, must be weighed against any increase in risks to human health and the environment.

Senator LAUTENBERG. Thank you very much, Mr. Dixon.

Senator Smith, would you be willing to start with your questions? I've got an urgent phone call.

Senator SMITH. Either Mr. Fultz or Mr. Abrams, or maybe both, could answer this. I understand that the deterrent effect that cleanup liability would have in encouraging waste management in the future—I think that's obvious—but, is there evidence that retroactive liability for the cleanup of waste that was legally disposed of prior to 1980—is there any evidence that that deters business from polluting in the future? Is there a deterrent feature here in this law that you see, based on your own experience?

Mr. ABRAMS. I think there has been—and Jim can piggyback on my response. I think this powerful club, and admittedly, Senator Smith, it is powerful—it's very onerous, it's very strong—but, we're dealing with a serious issue that's of concern to the 260 million Americans you talked about. The Government in this country acted in 1980 to create a Governmental response to this.

So, with this very powerful weapon being out there, I think in part we have seen a response that has altered, in some instances, the very manufacturing process of many things in this country, that have eliminated some of those toxic chemicals that were being used in the past, because they realized that there's a very heavy price to pay, a very heavy burden under the strict, joint and several liability standard that's in the existing law. I think it really sensitizes the present production methodology and the future practices of these corporations and companies. Didn't we see that in that case up in western New York, where we saw MIC being removed as one of the components of the manufacturing process after the Bhopal incident disclosed how dangerous that particular chemical was?

Mr. SEVINSKY. If I could just add for a second.

A number of companies in New York State and, I think, across the Nation as well, are moving toward pollution prevention as opposed to just complying with whatever the State of the law or regulations is today. They're going back and taking a hard look at all of

their processes. In New York, we've seen IBM, for example, substitute a whole new kind of solvent used in its circuit-making processes, and it was not just to get the benefits of not having an expensive hazardous waste to dispose of—which is one benefit of such process changes under the current law. I think the kinds of larger lessons which have gotten to a number of the big companies are that, with retroactive liability possible, you can never fully escape liability merely by complying with the law as it is today or tomorrow—you have a potential continuing liability, so there are tremendous additional incentives built in to convert to more efficient and less polluting manufacturing processes. I think the pollution prevention momentum that we are seeing today, that's coming from the private sector, and not directly imposed by Government, is testimony to that.

Senator SMITH. Would you respond to the same question?

Mr. FULTZ. I would basically agree with what the other witnesses have said. I think the lessons that we've learned in our Nation's nuclear weapons complex illustrates the point also. In that situation, the Department of Energy indemnified the contractors that were charged with producing the weapon grade material for our nuclear arsenal. Because they were indemnified, I think history has shown, and many GAO reviews have shown—frankly, I was director of the energy issue area for a number of years—that because they were indemnified, they weren't as careful as they needed to be. They didn't dispose of the waste in the proper manner, according to the various and sundry State laws in existence and because of that, today, sir, the U.S. Government is facing upward of $160–$200 billion in cleaning up our Nation's weapons complex—some of which will be Superfund sites.

So, I would have to say that this is another good argument for holding people responsible.

Senator SMITH. Mr. Abrams, the type of people that you see in the industry, coming forth, just on your own experience in New York—are they cooperative or are they kind of confrontational? Is there a frustration? How would you characterize the whole situation on those people that you deal with on the issue?

Mr. ABRAMS. Well, it varies, Senator, but I think that as the years have gone by, there has been stark realization setting in, where businesses understand what their liability and responsibility is and they're represented by responsible counsel, so I really think they move toward wanting to expeditiously negotiate reasonable settlements, and move it along as quickly as possible.

I think the record is replete, now, based probably on what was said at earlier hearings and certainly during the first panel, that there are problems and they relate, in part, to some of these de minimis situations. That's where, I think, more can done, as Mr. Fultz has indicated in the GAO report.

I guess the essence of our position is "don't throw the baby out with the dirty bath water". The liability standard is strong, but it has done some important things to help facilitate and resolve difficult issues. If you have a recognized problem with these de minimis situations, well let's go and tackle that, either using existing powers that are in the law that EPA, for whatever reasons, has not been utilizing—that's where there might be some legislative re-

dress and reform, using ADR or other kinds of concepts. I guess that's the essence of the perspective that we bring, based upon many years of litigation.

Senator SMITH. Did you wish to respond? You don't have to.

Mr. DIXON. No, I want to respond, actually, to your first question about the incentive affects. I think it's important to distinguish between retroactive and prospective liability. I think there can be argument that what you really need is prospective liability from someday forward, to influence people's actions, and that retroactive liability may not be necessary to do that. What you're interested in influencing is what people do from today on, so I think it's important to make that distinction. There's no question that retroactive liability got the attention of people during the 1980's, but it may no longer be needed to accomplish that.

Senator SMITH. I see the Chairman is back. One other question here and I'll yield.

Either Mr. Fultz or, perhaps, Mr. Dixon. It's pretty obvious that the private sector has spent an enormous amount of money in litigation and transaction costs but, from your own observations, what about EPA? How much money, or what percentage of EPA's budget, do you think actually goes to cleanup as opposed to litigation and other transaction costs? That's probably better put to EPA, but as GAO, I thought maybe you might have some idea.

Mr. FULTZ. I'm not prepared, at this point, to give you those figures, but I'd be happy to supply them to the record.

Senator SMITH. Do you have any ballpark estimate?

Mr. DIXON. We know that EPA spends about 15 percent of its Superfund budget on enforcement—clearly a transaction cost—clearly related to raising money. I don't have a good notion of how they spend the other 85 percent, for example, how much of the time of EPA's staff is spent finding PRPs. That's something that I think needs to be done.

Mr. FULTZ. EPA spends about $230–$240 million per year on enforcement activities of Superfund. There could be some other hidden costs or other costs that I'm just not aware of.

Senator SMITH. You might be interested to know, on a personal level, Mr. Chairman, that I yielded three members of my staff over the past 4 or 5 years, who have worked on this area, from my personal staff, have left to go into the environmental law practice. Probably making pretty good money. That might be somewhat reflective of the problem we face here.

I guess that's why I disagree, Mr. Abrams, with respect to the joint and several issue. It just seems to me that if we can't clearly define liabilities, that this is just a whole legal bureaucracy of litigation that's going to continue to rise. There are times when litigation is necessary, obviously, but it just seems to me that that's going to continue to eat up a huge amount of the costs that would be better spent on cleanup. That's the first point.

The second point you may wish to respond to, in conclusion, is whether or not we do adequate risk assessment and prioritization before entering into these situations. For example, if we spend $250 million litigating, I have to assume that some of this litigation—obviously not all of it—but some of it may be litigating a matter for cleanup that may not be as high a priority as another one that

we haven't even touched yet. That's the thing that bothers me the most about sticking with the joint and several liability issue as it is now.

Mr. ABRAMS. Well you know, a lot of the cases—indeed, we believe most of the cases—settle out early on. You all hear the horror stories, and there might be the worksheet and the chart of some of the worst examples over a 13-year period, but so many of the cases do settle out and that's because of the strong standard that is there. Again, our perspective is let's really focus where so much of the problem lies, and apply our experience and our intelligence without upsetting a whole liability scheme that we think has created some very important cleanups that have taken place not just through the Federal response, but through the State response as well, because the States are cleaning up far more sites than the Federal EPA, in the 50 States of the Union.

Senator SMITH. I did have one more. Mr. Abrams, there was something in your testimony—and this is not meant to be a hostile question—that I don't understand. You indicate the need to maintain joint and several liability in order to clean up sites not currently eligible for Federal action. If they're not eligible for Federal action, because they're not on the NPL list—what are you saying? That we mandate that on the ones that aren't on the NPL?

Mr. ABRAMS. Well, right now, out of 760 sites in New York that are scheduled for remediation, only 82 are on the NPL. So, it's the States that are really working to clean this up, utilizing this strict, joint, and several liability standard. If we move toward these other proposals, then you're tinkering with that standard. Even though you're only doing it with the Federal Government, it's our perspective that there would be then the big push in State legislatures all around the Country to change the State standards. So, you're really going to be slowing up the ability for States to clean up the vast number of sites that are being attended to right now, under the existing framework.

Senator SMITH. That could happen, but that would not be the scope of the current Superfund change, because it would be dealing with the ones on the NPL. The States still have the flexibility, at this point, to decide how they want to deal with those not on the NPL.

Mr. ABRAMS. If that ever happened, once industry forces have scored that victory here at the Congress, you better believe they're going to be at the State legislatures to press for the change at the State level. I submit, from our perspective, that that would not be in the interest of cleaning up these sites as quickly as possible and getting as many cleaned up as can be done. Because then if you move, for example, toward the AIG proposal, we believe that the fund of money either at the Federal and/or State level, will never be enough to really take care of all the sites and the problems, and it would put an enormous economic burden on the States that doesn't exist today.

Senator LAUTENBERG. Thank you, Attorney General Abrams.

Any of you, is there a comparison between the experience of New York State with these non-NPLs, compared with the NPLs—if I remember correctly, almost a ten times larger number of State sites, let's call them. Obviously, there is a similar experience—maybe not

in proportionate ratios—but where there are lots of State sites and a few NPL sites. Are those States, do we know universally, using common law to pursue the violators there?

Mr. ABRAMS. Yes. They're using common law and, in some instances, they may well have had State statutes passed, but they are using the strict, joint, and several liability standard to be able to accomplish the cleanups, and that's what we are concerned about. As industry comes forward and puts forward the two proposals—the AIG proposal, as well as the proportional responsibility proposal.

Senator LAUTENBERG. I must say, there's a certain ring of appeal to explain how you can tax people retroactively if there was no law that was violated. But again, using some of the old adages about one's responsibility to neighbors, which is the foundation of the strict liability practice that we're engaged in, if I'm using correct terminology.

I would ask you this, Mr. Dixon. How does Superfund transaction cost compare to other tort liability schemes?

Mr. DIXON. We've looked at some other tort liability schemes and found that there's a wide variation in the transaction costs for different types of tort liabilities. For example, consider airline accidents and the transaction costs induced in resolving airline accident cases—in that case, liability is pretty well defined and it's pretty clear who is going to pay. The size of the payment is really at issue. There, the transaction costs were 14–15 percent—so, lower than we've observed for Superfund.

On the other hand, if you look at asbestos litigation, where both who is going to pay as well as the size of the award are is very much in dispute, we found transaction costs upward of 50 percent—actually higher than we've observed for Superfund—and overall tort litigation of about 35 percent, and Superfund falls in this range. However, I think the most important question is, are there ways to reform the Superfund process to make those transaction costs go down because Superfund, in many ways, is different from these other cases, in particular because of the very central role of EPA in the process.

Senator LAUTENBERG. The airline example is one that is so obvious. The question whether there was negligent behavior on the part of the airline, and that changes the equation a little bit. Otherwise, the most you can get is a relatively small amount.

If we did better on the de minimis side and had an allocation scheme along with it, what would be the prospects for reducing transaction costs there?

Mr. DIXON. One of the things that RAND has done a fair amount of work on is ADR—Alternative Dispute Resolution mechanisms. One of the bottom-line findings is that the transaction costs very much depend on how the system is designed and implemented. If you design and implement a system improperly, you may not reduce transaction costs at all. So, I think a lot of attention needs to be put into the kind of adjudication mechanism, and the actual details of the design and what broad principles it should conform to, and move in that direction. Until that's done, it would be very difficult to come up with any sense of how much transaction costs really could be reduced.

Senator LAUTENBERG. Attorney General Abrams, would you agree, generally? I saw you nod affirmatively. Do you think there would be a significant reduction?

Mr. ABRAMS. Yes. Again, if we keep the liability standard in place, and keep our eye on the ball, and what is really precipitating the visits to Senator Warner's office and to other Senators' offices, and the hue and cry—let's look at those and see how we can resolve them. As the GAO has pointed out, there is plenty of existing authority right now for EPA to step in. The ADR concept can be applied in a more aggressive and effective way. I think that's the path I would like to see people walk on to deal with some of the problems that have emerged from 13 years of experience.

Senator LAUTENBERG. You know the New York legislature. Would you see them just chomping at the bit to raise taxes at the State level to support a public works program?

Mr. ABRAMS. I see it as a double-barreled problem. This is going to be a very, very big fund. For Congress, it's a big problem—how is this money going to be generated every single year—and certainly is as it comes to the State legislature. As you well know, a gubernatorial race was just conducted in your own State and a whole sensitivity of the tax issue was at the heart of that race, as it has been at the heart of governmental policy decisionmaking for the last number of years. So, I'm really troubled by this AIG proposal because it puts a 10 percent burden on the part of the States that does not exist today, and where is that money going to come from, in terms of the State? I just don't see it happening and, if that's the case, then you won't have the cleanups, so why not look to use the scalpel rather than the meat axe in dealing with the problems that have emerged under CERCLA?

Senator LAUTENBERG. The primary complaint seems to be the size of the transaction costs, but as we search the files, what have we found in terms of the size, the magnitude, of the transaction costs, in the case of Superfund? Are there any indications of really massive amounts of transaction costs as opposed to the settlement of a case?

Mr. FULTZ. I don't believe EPA has the data to show exactly what the cost is and how much they have spent.

Senator LAUTENBERG. They don't always get that information.

Mr. FULTZ. I don't believe they do. I will say, as I said in my statement, Mr. Chairman, EPA just really hasn't emphasized the use of the tools already available in the legislation, and that's something that GAO would suggest. We certainly are not opposed to statutory changes, but we are suggesting that you do ask EPA to use the tools that you already have made available to them. I think that's going to help a lot.

There are some proposals that we've seen, some were discussed here this morning. I sat back there and listened to them, but we have some concerns about them. I think that the comments that Senator Baucus made about agreeing on a certain set of criteria, and then judging each of those proposals has merit. But you, the members of Congress, need to decide what that criteria needs to be.

Senator LAUTENBERG. That's the purpose of this examination, because there are few who disagree with the mission of Superfund, but the argument seems to focus around a couple of areas which

are, again, under consideration by the hearings thus far and probably more, and a fairly long and arduous reauthorization process. But, we want to get it done. I haven't heard many people—I didn't poll Senator Smith—who want to see the Superfund program eliminated.

The existing statute, as you just said Mr. Fultz, if properly implemented, could likely reduce transaction costs. Is there any kind of a guesstimate or a projection that we could use that would give us a clue as to what the dimension of that might be?

Mr. FULTZ. At this point, I don't know.

Senator LAUTENBERG. It's hard to project.

Mr. FULTZ. It's hard to project, but I would ask that the EPA provide some information on that and perhaps they could tell you more explicitly what they plan to do. They do have, I think, a good plan. They had suggested a 15 month period where they are going to emphasize the enforcement tools. I think Congress ought to hold them responsible and accountable for that plan. Hopefully, it will work. It looks good, but they have to implement it—that's the key.

Senator LAUTENBERG. In the discussion of the liability scheme, the focus seemed to be more on the retroactivity than it was on the proportionality involved in it.

I would ask Attorney General Abrams or your colleague what you might think of the consequences of eliminating the joint and several responsibility?

Mr. ABRAMS. Again, I think any tinkering with the fundamental liability scheme would be harmful in a couple of ways. It would put increased economic burdens on the States and I think it would delay the cleanups that are right now and that have been taking place over the past decade, as a result of this powerful weapon available not just to the EPA but to the States, to the Attorneys General, and other environmental enforcement agencies within their own States. That's a double-barreled, enormous concern to us—both the cost component, and really dealing a blow to the ultimate goal of what's at stake here—the expeditious moving forward with the cleaning up of these sites.

Senator LAUTENBERG. How about a hybrid proposal that allowed for some funding? I guess once you start down that separate funding road, it's hard to calculate where the turns and the curves take you. But, there is this generic resistance to joint and several retroactivity. If it were possible to define how you deal with it, absent these things, I would ask you, Mr. Abrams, how many of the members of the Association of Attorneys General—if you can give me that—support the point of view that you express here? Are you speaking for the Association in addition to your own position for the State of New York?

Mr. ABRAMS. I'm speaking on my own behalf as well as on behalf of the Association, based upon resolutions that have been passed by the Association—overwhelmingly, if not unanimously—affirming this position, and this is not only the view of the Attorneys General in the Country, but of the Governors and the enforcement community.

Senator LAUTENBERG. You wanted to add something?

Mr. SEVINSKY. I would add Senator, if I could, that one of the consequences of changing the joint and several liability now is that

this has already been litigated and has been resolved. In New York, in 1985, the Second Circuit Court of Appeals decided that both under the common law, which had existed for centuries, and under CERCLA, strict, joint, and several liability was the standard.

From that point on, we're here as the litigating lawyers for the State of New York but, quite frankly, a much greater share of the work on Superfund sites in the State of New York shifted over to the Department of Environmental Conservation. They have gotten administrative consent orders at scores of sites. The Commissioner alluded to that in his testimony to this committee in July. So, what we have found is that while you're hearing a couple of horror stories at some of the worst, most intractable sites in the country here, that at the same time, you are seeing the affects of this liability scheme resulting in settlements at scores of other sites. That's been our experience.

I think that when you're looking at retroactive liability or strict, joint, and several—keep it. The allocation process among third parties—I don't know how you're going to get the insurers and the chemical manufacturers away from each other's throats in the allocation process—but that's very separate. Where that issue has occurred in New York, we have got a site that is being cleaned up, and we have a community that's cleaner. It may be that some insurers and some chemical manufacturers are going to have to continue to fight over what the policy issued in 1954 meant, but I think you have to keep your eye on the number of sites where that's actually a problem. Consider the proposals that EPA is considering on municipal liability, de minimis, NBARs, binding arbitration, etc.

Senator LAUTENBERG. Have you noticed, in the Association, or in any reviews that you might have done of NGA, whether there have been significant regional differences on the view of the liability structure as it is? Are the rural States less inclined than States that have, say, mining activities? Is there any perceptible difference between attitudes or was there a block in the Attorneys General Association?

Mr. SEVINSKY. I believe that resolution was submitted to you as part of the longer testimony. I do not believe that there were any dissenting votes on that. However, there may have been an abstention on it, and it was perhaps a western farming State. But, there were not people who voted against it, and that resolution says retain strict, joint, and several.

Senator LAUTENBERG. Were there those who argued against it?

Mr. SEVINSKY. I don't believe they argued at the floor on that. There was, at one point, an analysis by NAAG that's in that resolution that says that 36 States have, on their own—while they may use section 107 of CERCLA as we do when we go to court to recover our costs—that 36 States have some form of strict, joint, and several, by statute, as New Jersey does in its Spill Fund and Compensation Act, or by common law, as a number of other States like New York have as a standard in their own law. It's certainly true in major industrial States and the ones with the sites that need cleanup, predominantly.

Senator LAUTENBERG. In the cases where specific statutes are enacted to deal with the liability question on hazardous toxic waste

sites—do they automatically preempt the use of common law, or can a case be pursued under either approach? Does common law ever get eliminated, where a State enacts its own set of laws?

Mr. SEVINSKY. It has to be crystal clear in the statute that it intends to abrogate the common law. You would have to have a very clear intent and of course, that is part of what we've urged. For the Attorneys General, I think I can say they're unanimous on this—we do not want Federal preemption of the States' ability to either pass statutes or apply the common law of the 50 States. It could be abrogated by statute, but it would have to be explicit.

Senator LAUTENBERG. If we have other questions from other members that would have been asked of you had they been able to here, we generally accept the process where they submit it in writing and we ask that you would please be as responsive as you've been here.

We thank you for your excellent testimony and look forward to having your input on matters that you think are important, even though you're not called to the witness table.

This hearing is adjourned.

[Whereupon, at 12:25 p.m., the subcommittee adjourned, to reconvene at the call of the Chair.]

[Statements submitted for the record follow:]

CHEMICAL
MANUFACTURERS
ASSOCIATION

STATEMENT

OF

BERNARD J. REILLY

CORPORATE COUNSEL
DUPONT COMPANY

ON BEHALF OF THE

CHEMICAL MANUFACTURERS ASSOCIATION

BEFORE THE

ENVIRONMENT AND PUBLIC WORKS COMMITTEE
SUBCOMMITTEE ON SUPERFUND, RECYCLING AND SOLID WASTE MANAGEMENT
U.S. SENATE

ON

SUPERFUND LIABILITY

NOVEMBER 4, 1993

2501 M Street, NW 202-887-1100
Washington, D.C. 20037 Telex 89617 (CMA WSH)

Good afternoon Mr. Chairman and Members of the Subcommittee. My name is Bernie Reilly and I'm Corporate Counsel for Du Pont. I'm pleased to be here today to testify on behalf of the Chemical Manufacturers Association, or CMA.

CMA and its member companies, including Du Pont, have been working with EPA to try to make Superfund work since the program was created in 1980. We now have 13 years of first-hand experience with all of Superfund's problems, including those created by the law's joint and several liability standard.

Last December, at his economic conference in Little Rock, then President-elect Clinton said he was "appalled by the paralysis" of the Superfund program and "by the fact that the money's being blown." President Clinton also said something else that day, something we in the chemical industry took to heart. He said that all of us are "duty bound to do a much better job" of cleaning up contaminated waste sites.

The President was right. We are duty bound to make Superfund work. That's why we're here today -- not to play the blame game, not to complain about the problems with the Superfund program. We're here to present solutions for putting Superfund back on track. We believe our plan answers President's Clinton call to make Superfund work. We also believe it addresses Vice President Gore's efforts to reinvent government.

Our proposal is simple, straightforward, and gets to the heart of the liability problem as we see it. We call our proposal the Fair Share Liability System. Our Fair Share system determines a party's liability for a Superfund cleanup on a proportional basis. That means each party pays for what it contributed towards contaminating a site. Moreover, Fair Share is not a budget buster. We believe demands on the Trust Fund because of orphan share payments should be offset by reduced enforcement needs, remedy selection reforms, and the like. If it can be shown shown there is a need for increased funding, however, CMA strongly believes the increase must be financed by a broad-based funding mechanism such as the Corporate Environmental Tax.

Our Fair Share proposal would replace the current joint and several liability standard. Joint and several liability makes it possible for EPA to sue a few parties for the cost of cleanup and to place the burden on them to sue the other parties at the site to collect their share of cleanup costs. The joint and several standard gives EPA no incentive at all to ride herd on spending and has created an environment that has spawned many cases of waste, fraud, and abuse. Joint and several has set off a chain reaction of lawsuits that has led to the meltdown of the Superfund program.

Our Fair Share system would shut down the chain reaction and break the cycle of litigation. Under the proposal, EPA would assemble information about a site, identify the potentially responsible parties, and then file an administrative petition to initiate a Binding

Allocation of Responsibility, or BAR. An impartial arbiter, in this case an Administrative Law Judge, would be assigned to allocate responsibility for paying the cleanup costs. All the while, the remediation process would move forward independently, on a separate track and independent of the liability system -- unlike the current program where the cleanup decisions are constantly being pulled down into the joint and several quagmire.

In our Fair Share proposal, the arbiter would consider the facts, weigh the evidence, and assign responsibility in a streamlined, flexible process designed to reach "rough justice" rather than perfection. The arbiter would have broad information-gathering powers, parties would be required to turn over any information they have about a site or face severe sanctions, and EPA would retain the strong civil and criminal enforcement authority it needs to make the process work.

The arbiter's decision would be binding and typically would take no more than 18 months to be issued. "De micromis" parties could be cashed out even sooner, possibly as early as six months after the BAR begins, and de minimis parties could be cashed out at the end of the BAR. Our proposal permits appeals of the arbiter's decision, but the standard of review is notoriously tough -- an allocation couldn't be overturned unless it was "arbitrary and capricious." To further discourage frivolous suits, losing parties would have to pay the government's legal costs. Beyond this, litigation, specifically the third-party contribution actions parties are now bringing against each other, would be prohibited.

Under our Fair Share system, the Trust Fund would pay for the shares of parties who cannot be identified, or are defunct, insolvent or bankrupt -- the so-called "orphan shares." To assure the Trust Fund doesn't pay more than its fair share, our proposal calls for EPA to appoint a "Guardian" to represent the Fund in the BAR process and to argue for as small an orphan share as is appropriate.

If parties wanted to opt out of this BAR process up front -- or at any time before a BAR is issued -- our proposal would allow this. To do so, parties would have to negotiate their own allocation of 100 percent of the remediation costs. This allocation could include monies from the Trust Fund if EPA agreed to such a "mixed funding" arrangement. Of course, third-party contribution actions would still be prohibited even in the case of such a "voluntary" BAR.

One last point deserves mentioning. Although our proposal would eliminate joint and several liability, EPA would still retain authority to order one or more parties to conduct a removal or remedial action much like the Agency now does under Section 106 of the law. This would allow for emergency removals that cannot wait for allocations of liability to be made. It would also allow for later long-term remediation activities where parties have not stepped forward to do the cleanup. The difference between current practice and our proposal is that under Fair Share liability the parties targeted by the orders

would be reimbursed for any costs incurred beyond their rightful share.

Mr. Chairman, we believe Fair Share liability follows the principles for Superfund reform already outlined by President Clinton, Administrator Browner, and others. First and foremost, the Fair Share scheme would keep the "Polluter Pays" Principle intact. Next, Fair Share would make government work better. It would force EPA to administer the Superfund program more efficiently, more effectively, and more equitably. It would also substantially speed the pace of cleanups and lower transaction costs. In addition, our Fair Share proposal would apportion liability based largely on the well-known "Gore Factors" developed by Vice President Al Gore back in 1980 when Superfund first became law and the Vice President was a member of the House of Representatives.

Fixing the liability standard alone will not correct all that's wrong with Superfund but will go a long ways to getting the program back on track. Coupled with a meaningful reform of the remedy selection process, Fair Share can mean a fresh start for the program.

Thank you, Mr. Chairman, and I'll be happy to answer any questions.

A "FAIR SHARE" LIABILITY SYSTEM FOR SUPERFUND

A workable proposal to accelerate Superfund proceedings and reduce transaction costs by apportioning liability among PRPs so as to provide "rough justice" at NPL sites.

CHEMICAL MANUFACTURERS ASSOCIATION

August 17, 1993

A "FAIR SHARE" LIABILITY SYSTEM FOR SUPERFUND

The Superfund liability system is urgently in need of reform. The current system for determining who is liable, and for allocating costs among the liable parties, takes much too long and costs far too much, even when no litigation is involved. A growing number of cases do end up in court, and those cases take even longer and cost even more. The result is a staggering waste of resources for all involved.

Fortunately, the problems with the current liability system can be solved in a way that benefits all Superfund stakeholders. What is needed is a system that quickly and efficiently determines the fair share of each Potentially Responsible Party (PRP) without the need for litigation. These shares would be determined at the same time that EPA selects the appropriate cleanup plan for the site. Each PRP would then receive an annual invoice for its fair share of cleanup costs as those costs are actually incurred. For "orphan" PRPs, i.e., those PRPs that are unidentifiable, no longer in existence, or insolvent, the Superfund would pay their fair shares of liability.

THE BENEFITS OF REFORM

The "fair share" liability system described in this paper offers substantial benefits, including:

1. **Expedited determination of liability.** All stakeholders at NPL sites would know early in the process exactly who is liable for cleanup costs and exactly how those costs will be allocated among the liable parties.
2. **Litigation minimized or eliminated.** At most NPL sites, there would be no incentive for EPA or the PRPs to resort to litigation.
3. **Greatly reduced transaction costs.** Because allocation occurs in a streamlined administrative proceeding, typically within an 18-month period, transaction costs would be minimized.
4. **Enhanced fairness.** PRPs would no longer be compelled to pay for more than their fair share of the problem at a Superfund site.
5. **Improved EPA decision making.** Because the Superfund would pay for the "orphan" share at each NPL site, EPA would now have a direct financial stake in its cleanup decisions. This should tend to minimize "gold-plated" remedies and wasteful spending.

The remainder of this paper provides an overview and summary of the proposed "fair share" liability system for Superfund. Attached to this paper is a longer and more detailed description of the "fair share" proposal.

BASIC CONCEPTS

The proposed "fair share" liability system includes a number of basic concepts that are central to its intended operation. They are as follows:

A. **Liability at NPL sites limited to "fair share."** The current system of joint and several liability under section 107 of CERCLA would be reformed so that PRPs at National Priority List sites would generally pay only their fair shares of response costs, as determined by independent Administrative Law Judges ("ALJs"). Liability would still be strict and **retroactive, but it would no longer be joint and several. The Superfund would pay the shares of any "orphan" PRPs, i.e., unidentifiable PRPs, PRPs that are no longer in existence, or PRPs that are insolvent. EPA would be encouraged to pursue these "orphans" whenever feasible, e.g., in bankruptcy proceedings, to recover monies paid from the Superfund.**

One important exception to this "fair share" concept is the issuance of unilateral administrative orders under section 106 of CERCLA to compel performance of immediate removal actions at NPL sites, where swift action may be essential. In such emergency situations, EPA would retain the ability to impose joint and several liability on an interim basis, in order to enforce the administrative order, but such liability would be subject to eventual reallocation in accordance with the "fair share" system described in this paper.

B. **Moratorium on cost recovery litigation at NPL sites.** In order to reduce transaction costs, no cost recovery action, governmental enforcement action, or contribution action could be filed at any NPL site until 90 days after issuance of the Binding Allocation of Responsibility ("BAR"). Special transition rules for pending litigation are described in the attached paper.

C. **Early Binding Allocation of Responsibility ("BAR").** In arriving at a Binding Allocation of Responsibility, or "BAR," that determines the "fair share" of each PRP, the ALJ would consider (1) the so-called "Gore factors," including the volume and toxicity of the hazardous substances, the degree of care exercised, and the degree of cooperation with governmental personnel, (2) any other equitable factors that the ALJ determines are appropriate, and (3) the weight of the evidence regarding liability. The BAR decision would be issued at about the same time as EPA's first Record of Decision at the site, but any delay in the BAR proceeding would not delay any response actions at the site.

D. **Development of factual record for BAR.** EPA (or the state agency) would be required to conduct a thorough PRP search early in the process and then issue early CERCLA § 104(e) information requests to all known PRPs in order to develop the initial factual record for the BAR. This factual record would then be supplemented as the PRPs submit additional information to the ALJ, including the names of additional PRPs that EPA may have overlooked. Strict provisions regarding duty of inquiry, certification of information, and the like would insure that all pertinent information will be disclosed to the ALJ. Limited discovery by the PRPs would also be available in the ALJ's discretion.

E. **Protection of the Superfund**. EPA would appoint a legal representative, to be known as the "Guardian of the Fund," to participate in the BAR proceeding. The Guardian would help ensure that the size of the "orphan" share reflects the available evidence and is not excessive.

F. **Finality of the BAR**. Subject only to limited judicial review, the BAR would be a final allocation of all recoverable response costs incurred at the site. (A limited opportunity to reopen the BAR after 5 years could be triggered only under exceptional circumstances, and even then, the revised BAR would apply only to future costs not yet incurred.) Thus, contribution actions would be virtually eliminated.

G. **Judicial Review of the BAR**. Any challenge to the BAR would be filed in federal district court. Unless the court found that the share allocated to the challenging party was "arbitrary and capricious," or that the challenging party was not liable as a matter of law, the unsuccessful challenger would pay all the attorney's fees incurred in defending the challenge. If the challenge was successful, then the "shortfall" between the share allocated in the BAR and the share adopted by the court would be paid by the Superfund, not by the other PRPs.

H. **Simple and Swift Enforcement of BAR**. As response costs are incurred, the party performing the work (either EPA or the PRPs) would send invoices to each PRP (or, in the case of an "orphan" PRP, to the Superfund) for its proportional share of those costs, as set forth in the BAR. Subject only to limited challenge on the ground of "NCP inconsistency" (as under current law), the PRP receiving the invoice would be obligated to pay promptly or else face substantial sanctions.

CONCLUSION

In sum, many of the problems associated with the current Superfund liability system can be eliminated through a system that focuses on holding each party responsible for its "fair share" of the problem. The proposal described here, and set forth in greater detail in the attached paper, offers substantial benefits for all stakeholders in the Superfund program.

TESTIMONY OF JAN M. EDELSTEIN

DIRECTOR, NATIONAL ENVIRONMENTAL TRUST FUND PROJECT

TO THE

SENATE SUBCOMMITTEE ON SUPERFUND, RECYCLING,

AND HAZARDOUS WASTE

NOVEMBER 4, 1993

The National Environmental Trust Fund (NETF) project appreciates the opportunity to testify before the Superfund, Recycling, and Hazardous Waste Subcommittee and provide you with our thoughts on Superfund. My name is Jan Edelstein and I am Special Assistant to the Chairman of the American International Group, Inc. (AIG) and Director of the NETF Project.

I have divided my testimony into five sections:

- Background on the NETF project;
- Benefits of the NETF
- Recent developments on the liability reform front;
- Rebuttal of criticisms leveled against NETF–like proposals; and
- A critique of some prominent liability reform alternatives.

THE NETF PROJECT

The NETF project was established in 1989 by the American International Group, Inc., Crum & Forster Insurance Companies, and Fireman's Fund Insurance Companies. Later, we were joined by the Continental Insurance Company. Since the NETF project's founding, more than 1,700 small businesses, large businesses, local governments, and individuals, have endorsed our proposal.

We developed the NETF project for two reasons: first, insurers faced mounting

legal costs and potentially large claims due to Superfund's liability system; and second, it was obvious that Superfund was not working.

A founding principle of the NETF was that an overhaul of Superfund's retroactive, site-specific liability regime was the best way to assure that the program attained its primary goal of prompt, effective, long term cleanup of old hazardous waste sites. Such reform would, of course, solve the problems faced by insurers; but it would also solve the problems of numerous other Superfund stakeholders.

The original NETF proposal called for creating a broad-based trust fund to replace use of retroactive liability as Superfund's primary funding mechanism for wastes disposed of prior to a certain date. This trust fund would be used to pay for cleanup of old waste regardless of site-specific liability, except for parties which acted illegally. For wastes disposed after the cutoff debate, we proposed retaining the current liability system.

We originally proposed that money for the expanded Superfund be raised by adding a separate, earmarked two percent fee to all commercial/industrial property and casualty insurance premiums paid in the United States.

The proposal was intentionally broad. Our goal was not to write a bill, but to stimulate debate among Superfund stakeholders over how to reform the liability system. From the beginning, we recognized the fact that critical questions had to be answered

about the trust fund concept if it was to have political support.

RECENT DEVELOPMENTS

In recent months, a growing number of groups have endorsed the trust fund concept as the preferred way to address the many problems caused by Superfund's use of a liability system to raise money for cleanup. Today, the trust fund concept, with support including the environmental justice movement, small business, insurers, and some major oil companies, chemical companies, and manufacturers has broader support than any other option presently on the table:

- Dr. Ben Chavis, Jr., Executive Director and Chief Executive Officer of the National Association for the Advancement of Colored People recently unveiled an eight point plan which includes a call for replacement of the current retroactive, site-specific liability system. What makes this plan so extraordinary is that Dr. Chavis developed it with John Johnstone, Chairman, President, and Chief Executive Officer of the Olin Corporation, and Joseph Brown, Chairman, President, and Chief Executive Officer of Talegen Holdings (formerly Crum & Forster Insurance Companies). This eight point plan, supported by a major chemical company, a leading insurance company, and the founder of the environmental justice movement, has the most broad-based support of any plan presently

advanced.

- Leading national small business groups, led by the American Furniture Manufacturers Association (AFMA), the International Fabricare Institute, the National Automobile Dealers Association (NADA), the National Food Processors Association (NFPA), and the Printing Industries of America (PIA) submitted a letter to NACEPT calling for elimination of the retroactive liability system to solve the small business community's problems with Superfund;

- The Department of the Treasury has called for replacement of the retroactive liability regime;

- Local Governments for Superfund Reform (LGSR) endorsed use of a trust fund to replace the retroactive liability regime;

- The Business Roundtable's (BRT) Policy Committee approved among its Superfund principles one calling for replacement of retroactive liability when a viable financing alternative is found; and

- Scores of businesses and individuals have written Congress and the Treasury to that effect.

In addition, over the last ten months, a group of companies and trade associations that have historically been at odds over Superfund financing and liability issues met to see if common ground could be found on a Superfund reform agenda. The group included representatives from the NETF project, the AFMA, and NFPA, Texaco, Alcoa, Phillips Petroleum and, most recently, Local Governments for Superfund Reform (LGSR).

This group developed a set of specific principles for reforming the Superfund liability system, as well as improving the clean up standard and program management portions of the statute.

Under the plan, retroactive liability for waste disposed by PRPs at multiparty industrial sites prior to January 1, 1987 will be eliminated, and replaced with broad based business taxes.

Recognizing that some have expressed concerns over whether this change would create transition problems, especially in cases where PRPs are on the verge of settlements with EPA, or have already reached settlements and are carrying out particular clean up tasks, the plan creates a credit system whereby funds spent on remediation-related activities after January 1, 1990 would be credited against future fund payments. Thus, any incentive to delay settlements in anticipation of liability relief is eliminated. Of course, EPA would continue to have the authority to issue Section 106 orders to compel PRPs to do cleanup work.

Others expressed concern that after passage of the law, on-going work would grind to a halt. The plan therefore requires that PRPs working pursuant to a consent decree or order continue to manage remediation through completion with the expanded Fund providing reimbursement for all remediation costs.

For disposal after 1987, the plan would replace the existing liability system with a system that includes proportional liability, mandatory mixed funding for orphan shares, and an enhanced settlement policy.

Finally, an illegal polluter exclusion is created so midnight dumpers and others whose illegal actions contributed to the creation of a site are not let off the hook.

Of course, the major objection to our proposal has been that business would never agree on how to raise the money for an expanded Superfund. This group accepted the challenge and has put forward a financing plan which demonstrates broad political support for higher taxes in exchange for retroactive liability relief.

Under the group's proposal, the expanded Superfund program for multi-party sites would total about $2.8 billion. When you add to this figure the $500 million which PRPs at single party sites would still pay for cleanups and an estimated $120 million for post-1986 and illegal disposal, you end up with a total annual program of about $3.4 billion. This would substantially increase cleanup spending over current policy. And even more

cleanup funds would be available if other reforms are made.

There are a variety of ways to raise these funds. Our view is that those groups which benefit should provide the financing. Among the options that have been discussed, and endorsed by many in the business community, are a doubling of the environmental income tax (EIT) to about $1.2 billion; a new line contribution from small business of $100 million; and a new $300 million contribution from the insurance industry. Existing crude oil and chemical feedstock taxes would remain at their current levels -- $550 million and $250 million respectively (since both industries also contribute to the fund through the environmental income tax). This leaves two major groups which would benefit significantly from the removal of site specific PRP liability: state and local governments, and the federal government. Both have very large liabilities at non-Federal facility sites. In addition, states currently have various shares of Superfund costs above and beyond their PRP liability. So we assume a ten percent share for states. In exchange, state and local liability would not only be eliminated, but we propose delegating management of the program to states with competence in the area. And we assume that the federal government would pay a share as well (which would be one payments instead of coming out of individual agency budgets as it does today).

Again, the underlying principle here is that those who benefit should pay, with the overwhelming contribution coming from business. As I said, a growing portion of the business community shares this view. In short, the question of whether a significant

portion of the business community is willing to support higher taxes in exchange for liability relief has been answered in the affirmative.

In the face of this growing political support for elimination of retroactive liability, many are still clinging to orthodoxies of the past: they fall back on soundbites that bear little relationship to Superfund reality. It is true that Superfund has always been an emotional issue; recently, the motives of many players seeking reform have been mischaracterized in a way which contributes to polarization, not dialogue. Indeed, one reason that Dr. Chavis approached business to develop a consensus reform plan was his recognition that simply moving the adversarial warfare from the Superfund sites to the halls of Congress would not yield a satisfying result for the People of Color community. He was right. We hope this Subcommittee reaches a similar conclusion.

BENEFITS OF THE NETF

We believe adoption of the NETF will result in a vastly improved Superfund program in several critical areas.

Speed of Cleanup: It is beyond dispute that the existing liability system delays cleanup. Don Clay, former head of EPA's Office of Solid Waste, who spearheaded efforts to reform Superfund in the last four years, said in a recent paper on the program that, "A basic conflict exists between the 'polluter pays' principle and the desire to clean up

contaminated sites as quickly as possible. Forcing polluters to pay, at a minimum cost to the government, clearly favors adversarial negotiation postures and litigation."

In fact, even EPA acknowledges that using the trust fund rather than a liability model results in faster cleanup. In its 1989 management review of Superfund, the agency stated "The quickest action taken for any given site may involve using the Trust Fund to finance government cleanup action. . . .If the goal of the Superfund program is to clean up sites as quickly as possible, then Fund-financed response may be the best mechanism. Additional time and effort are typically needed when using enforcement or settlement approaches to cleanup."

Cleanup Standards and Technology: The current liability system creates unavoidable conflict between PRPs and EPA over the remedy required to address site risks. Much of this conflict stems from the simple fact that EPA knows it is spending PRP money, not its own. The NETF, by eliminating retroactive liability, will allow all parties to focus on choosing the best remedy for public health and the environment. Similarly, the current system discourages use of innovative technologies since PRPs know that use of unproven remedies creates the real risk that they will pay twice: once to experiment and a second time if the innovative remedy fails. Again, eliminating retroactive liability will eliminate these disincentives.

Municipal Liability: Eliminating PRP liability for some municipal generators, without

eliminating liability for others similarly situated, is destructive for the program and unfair. It will do little to accelerate cleanup or reduce transaction costs and, arguably, could lead to more delays. Retroactive liability reform, as we propose, will solve the liability problem facing all municipalities, from generators and transporters to owner/operators in the context of broader liability reform which addresses legitimate liability grievances of thousands of other PRPs who can make virtually the same argument as those agitating for a municipal carveout.

Participation of Local Communities: The present liability system is a major reason why community leaders are usually absent from the cleanup process. EPA and PRPs generally speak through their lawyers, who tightly control the flow of information to third parties for negotiation strategy and litigation protection reasons. Unwelcome at the negotiating table and virtually ignored, citizen leaders are left out of the loop -- a situation that breeds suspicion and mistrust. The NETF, by eliminating retroactive liability, eliminates the incentives to isolate local players. As proposed, it would also create an explicit process to involve local leaders and affected parties on the front end.

Economic Redevelopment: Thousands of old, urban industrial sites lie vacant across the country. The Superfund retroactive liability system drives investors and businesses away from re-using old industrial properties. Like banks, corporations desiring to expand and developers steer clear of any site with a hint of contamination. Instead, they locate new facilities on pristine land. NETF holds out the promise of moving

much more quickly to clean up these sites and return them to the tax rolls.

RESPONSE TO NETF CRITICS

In recent weeks, criticism, of the NETF approach has been stepped up, in part reflecting the growing support for it. I'd like to take a few minutes to address some of these attacks.

The "Polluter Pays" Myth

First, the biggest red herring about this approach is that it would subvert the "polluter pays" doctrine. Mr. Chairman, the time is long past to bury this myth about Superfund; it is time to look at the Superfund reality, not the slogans which have dominated debate in the past.

The touchstone of Superfund liability is whether hazardous substances are in your waste, or if you are connected to a site in any way. It doesn't matter that you had no say in how the site was operated, or that the use of the site was entirely legal (or maybe even government–ordered). It doesn't matter how much; it doesn't matter whether your waste caused environmental harm; it doesn't matter whether there is any relationship between the chosen remedy and your waste; it doesn't even matter whether the amount of your waste is lower than that which naturally occurs in the air, water, or soil at the site. And

it doesn't matter whether you caused pollution at all. You do not have to have either operated a site or generated waste sent to a site. You can be liable if you owned a site after the polluting activity.

Further, making "polluters" pay is impossible in many cases. The law applies retroactively to practices which may go back 100 years or more. Many of the parties liable under Superfund are no longer living, solvent or discoverable. In reality, Superfund makes almost any party connected with the site, regardless of its responsibility for site contamination, liable for cleanup costs.

Because Superfund liability is so staggeringly broad, it envelops many kinds of businesses, small and large, not to mention government entities and non-profit institutions that provide valuable health, educational and community services. The vast majority are law abiding citizens who are not breaking the law now and did not break it in the past. Indeed, PRPs at Superfund sites were often doing what they were supposed to do: they had licensed haulers transport their waste, or they sent their waste to legally authorized sites. Their actions were legal at the time.

A study by Resources for the Future, which used EPA data, found evidence of illegal disposal by any party at only 10-14% of all Superfund sites (excluding federal government sites). Unfortunately, most members of this group have disappeared. Site operators, who made the majority of disposal decisions, and the "midnight dumpers," who

did illegally and irresponsibly dispose of waste, generally are financially insolvent, or nowhere to be found. That leaves most of the 26,000 PRPs identified so far — and the thousands of other companies sued in third party contribution actions -- to hold the financial bag and bear the "polluter" label.

Finally, there is the broader issue raised by the applicability of the "polluter pays" doctrine to Superfund: the hazardous waste at issue was created by decades of America's post World War II economic growth. Most segments of society benefitted from this growth and the high standard of living it generated, and most segments of society contributed to the waste disposal problem. Individual consumers demanded, purchased and disposed of products which contained hazardous substances. Businesses manufactured and sold these goods and disposed of the waste by-products. Other institutions — such as universities and hospitals -- played a role.

In short, there are very few elements of our society that have not participated in the generation and disposal of the waste which now requires cleanup. Superfund's finger-pointing exercise ignores this reality.

In a recent paper on Superfund, Don Clay, former head of EPA's Office of Solid Waste and a man widely credited with trying harder than anyone to date to make Superfund work, wrote that, "Contrary to popular perception, CERCLA does not establish a 'polluter pays' system for funding hazardous site cleanup. CERCLA polluters' conduct

ranges from various degrees of criminal or civil culpability, to the merely negligent, to those acting legally and responsibly at the time of disposal, to those acting at government direction, and even to those who had nothing to do with the actions that resulted in contamination. The 'polluter pays' concept, as it now exists in CERCLA, is an inefficient fund-raising method which penalizes many parties whose conduct was legal and responsible, with the ultimate financial burden either passed-through directly to the consumer in the form of increased costs of goods and services, or indirectly through businesses which either under-perform or fail."

The reality, Clay says, given the inadequate records at many sites, is that "the actual polluter at the site might never pay if insolvent or 'lying in the weeds,' placing the burden on the unfortunate 'deep pocket.' Since joint and several liability can be imposed without regard to relative proportions of waste contribution, some polluters do not pay at all while others pay too much."

In sum, "polluters pay" is the Big Lie of Superfund. You cannot subvert a non-existent principle.

What "polluter pays" really means is that cleanups are financed by business. In this regard, our proposal remains true to the "polluter pays" doctrine. Business will still pay, albeit through a more efficient fund raising system than the adversarial, litigation-based, site-specific model used today.

NETF=Tax Increase

A corollary to the attack that our proposal undercuts "polluters pay" is the claim that NETF or Treasury-style reform would require a tax increase of $14.4 billion over the next ten years. This assumption is presumably based on the fact that EPA settlements with PRPs have flattened out at $1.4 billion a year.

The bottom line is we're already raising $1.4 billion a year from the private sector. That "tax" is already in place. The issue is whether it is more efficient to raise this sum of money through the Superfund tax scheme or through private settlements as we do today. Either way, money is still being raised from business -- "polluters" in the Superfund nomenclature.

Those who make the tax hike argument seem to believe that Superfund today is a free lunch. It isn't. Every dime in PRP settlements is a dime less for other important programs requiring funding in the public and private sector. As Clay points out, "Cleanup is not 'free;' society pays for this program through higher prices, reduced investment and job growth, and incentives that cause former industrial areas to lie fallow while development occurs in pristine areas."

I submit that raising this money through the Superfund tax mechanism is vastly more efficient that the adversarial, litigation-based approach today. It would, for starters,

eliminate most of the additional $1 billion in transaction costs at NPL attributable to the current liability system.

The NETF and Transaction Costs

It is also claimed that the trust fund approach would create new sources of litigation and transaction costs, rather than decrease them. This accusation is patently untrue.

Currently, the Superfund liability system creates an estimated $1 billion per year in transaction costs from legal fees at NPL sites alone. Transaction costs have traditionally been highest for old waste disposal due to poor record-keeping for disposal that occurred before the mid-1980's. Without solid evidence upon which to allocate liability, the potential for litigation is almost unlimited, and settlement negotiations are extremely costly and slow.

Therefore, rather than delaying cleanup and expanding costs, eliminating liability disputes over old waste disposal would slash the $1 billion spent annually on legal fees, and would eliminate the wasteful costs which stem from the expectation of litigation, defensive overtesting, unnecessary paperwork, and duplicative review by PRP, EPA, and state officials and contractors. I have attached to my testimony a list of the transaction costs generated today which would disappear under our approach.

This criticism of the NETF appears to be based on the belief that the new system would yield new transaction costs involving the few remaining parties who disposed of waste after the liability cutoff date. But because far better waste records exist for disposal during and after the mid-1980s and much lower amounts of cleanup costs would be at stake, disputes surrounding the cutoff date will be far more limited and easier to resolve than current liability disputes. Settlement amongst all parties (EPA, PRPs, insurers and reinsurers) will come much faster. In fact, if one uses a December 31, 1986, cut off date, as we propose, most of the disputes which give rise to transaction costs today would disappear.

Using Resources for the Future's survey of all NPL sites, our proposal would end liability disputes entirely at about 80% of present NPL sites (those which had ceased accepting waste by that date). By eliminating liability for all parties who disposed of their waste prior to December 31, 1986, and paying for that share of the costs from the expanded Fund, it would also remove most parties from the liability disputes at the remaining 20% of the sites.

The business community proposals provide that PRPs be reimbursed for cleanup expenses paid after a fixed date, to avoid any slow-down in the shift to this new system and to avoid inequities. PRPs keep such detailed records now for purposes of cost recovery litigation and EPA already has regulations in place for reimbursement from the Fund. Some have suggested that transaction costs might be created by disputes over

whether these claims are valid. This is easily resolved, however, by Congress establishing a high standard of clear documentary proof for PRPs to recover.

Impact on Cleanup Progress

Third, it is argued that the mere prospect of elimination of retroactive liability would slow down cleanups as PRPs duck liability in anticipation of eventual relief.

This is another red herring. EPA properly raised it two years ago when the NETF first received serious discussion. We have responded to this legitimate concern by creating a mechanism in the proposal to give credits on their Superfund taxes to PRPs for any work they agree to do pursuant to consent decrees or administrative orders after 1990.

This removes any incentive to avoid settlement. But even more to the point, EPA would continue to have the full enforcement powers it wields today while the law is being debated. It would still have the ability through the use of 106 orders to compel PRPs to perform work under penalty of treble damages and $25,000 a day fines.

The Public Works Attack

Yet a fourth criticism is that our proposal would create a public works program for Superfund.

This ignores one fact: Superfund is already a "public works" program for all practical purposes. Government makes all the important decisions, and directly spends about half of all Superfund monies (raising the other half from PRPs).

At every step, EPA hires its own contractors either to do the work, or to supervise the work of PRPs. EPA decides what testing to do, what options to consider, what overall cleanup plan to implement, what remedial design to follow, and what remedial action to take. It approves all material changes in scope of work.

In making these decisions EPA officials lack efficiency incentives. After all, with "polluters" footing the bill, cleanup is a "free good." Similarly, excessive EPA overhead costs are encouraged by the theory that they will all be recovered someday from these "polluters" (even though only 10% have been recovered).

Finally, it is hard to imagine a more inefficient program than one which spends $1 billion per year in public and private transaction costs to raise under $1.5 billion a year in private sector cleanup commitments. And we believe that removing the mythology that

"someone will pay" would force EPA to pay attention to costs, to use its money where it will benefit the public health and environment the most.

Therefore, we reject the argument that a larger trust fund would be less efficient overall.

But we and others have suggested a wide variety of ways to improve the efficiency of the program. In addition to a detailed list of management changes, many of which GAO has recommended, we suggest two major changes be considered:

- Delegate the management of the program, particularly individual site remediation, to states with demonstrated competence in this area.

- For the remaining states, have the President investigate delegation of the contract implementation functions (where EPA appears weak) to either other agencies, or to public/private corporations.

ALTERATIVE REFORM MODELS

Other critics of liability reform tout different reform proposals as "the way to go" where Superfund is concerned. There are two of these "alternative" proposals, and while each has its proponents, each is also seriously flawed.

Fair Share

The leading alternative to the NETF approach has been advanced by the Chemical Manufacturers Association (CMA). CMA's "fair share" proposal has an attractive ring, but begins to sound hollow after analysis.

The "Fair Share" plan would assign cleanup costs at a Superfund site on a proportional basis, under which each party would pay its share, and only its share, of cleanup costs at a given site. This would take the place of Superfund's current joint and several liability system.

The "Fair Share" plan relies on Administrative Law Judges (ALJs) to make determinations of responsibility factors by weighing "Gore factors" that determine a party's cleanup responsibility based on six criteria: evidence, volume, toxicity, involvement, degree of care, and cooperation with the Government. The ALJs would have to resolve all allocation in 18 months. For those shares at a site where the responsible party cannot be found, or is bankrupt or insolvent, payment would be made by the trust fund.

Eliminating the threat of joint and several liability would remove one huge, current incentive for parties to fight overall costs and their allocation at every step. And if ALJs could, in fact, resolve allocation in 18 months, major cleanup delays would also be removed. However, the mere establishment of legislative deadlines can't overcome the

real world problems with apportionment.

The CMA proposal is based on a fair allocation of responsibility; however, this assumes the existence of facts to make these determinations. While large PRPs were supposed to keep disposal records after 1980, parties producing up to a ton a month of toxics did not need to do so until 1986, and municipalities almost never did. As anyone who has studied the history of Superfund knows, the overall data on disposal before the mid–1980's is very sparse, and in the case of smaller businesses, virtually non–existent. The CMA proposal makes no suggestions on how to overcome this data gap (much less how to provide additional information on issues called for by the "Gore factors" like "due care"). Another factor to consider is that transaction costs can increase dramatically as allocation negotiated and decided.

Don Clay comments that the "fair share" approach "is simply the system currently in place today, with binding arbitration and mandatory mixed funding. Thus, the structural problems attendant to the current system, including lack of resources for NBARs/BARs and mixed funding; lack of information on waste contribution; and inability of some PRPs to pay (municipalities, small businesses, schools, hospitals, etc.) are still present."

Perhaps even more fatal to "fair share" is that it offers no relief to parties especially hammered by the current system –– those parties, mostly smaller businesses and individuals, with few records regarding their waste contribution. As Clay says, "The

potential for injustice under an allocation-based system will be particularly acute in situations where some of the parties in the allocation have no information on their contribution. The relative disadvantage of those parties . . .is plain."

In other words, the "fair share" plan may be a great deal for big businesses like CMA's members, but it is a raw deal for smaller or less sophisticated PRPs. It is Superfund reform for the powerful, not for all aggrieved parties.

Perhaps the greatest defect in the "fair share" plan is in the financing area. We have come up with a way to finance the trust fund we propose; CMA is silent on how it will raise the vast additional sums required under its plan.

For starters, CMA does not address how the additional resources EPA will require to carry out its new allocation role will be raised. As Clay notes, "EPA will require substantially more resources to prepare allocations and otherwise play a much greater role in the PRP coalescing process." Where's the money to come from?

Equally important, by putting EPA squarely in the allocation business, this plan diverts even more time and resources from cleanup. In this sense, it moves Superfund in precisely the wrong direction. EPA has proven to be wholly incapable of allocation -- that's a major reason the current program is so abysmal and a major reason EPA has done so few NBARs to date.

And what about the much larger "orphan share" which will be created under a proportional scheme? This share sometimes can be 50 percent or more. Where's the money for this coming from? Administrative savings? Not likely. Moreover, EPA will be spending far more on allocation–related activities, eating up huge blocks of potential savings.

Finally, from the public health standpoint, fair share also falls short. By tying funding to the sites where solvent PRPs are present, it biases cleanup to those sites. Yet, these sites may not be those posing the greatest risk. In fact, because the proposal provides no additional funds and uses existing Trust funds to pay orphan shares at sites with solvent PRPs, the funds available at priority sites without solvent PRPs will be reduced. This could be a particular problem for old industrial sites in urban areas. Moreover, no additional funds would be provided for public health priorities, citizen empowerment, and other priorities.

The EPA Approach

The second prominent "alternative" Superfund reform plan is the EPA's Inter–Agency Task Force Superfund Liability Proposal. In this proposal, EPA basically rehashes many of the same administrative reforms it has been trying to implement for the last several years. In reality, the proposal just adds new legal and procedural layers to the current failed liability system.

The EPA proposal would retain retroactive, strict, joint and several liability and would also expand de minimis settlements and mixed funding. Let's look at these ideas individually.

The call for improving de minimis settlements calls to mind the old Ronald Reagan remark about Jimmy Carter: "There you go again." For the past several years EPA has tried repeatedly to "streamline" de minimis settlements and it has failed. To be sure, this is a worthy goal. But improved de minimis settlements suffers from one fatal flaw: you can't do them until EPA has a good idea of how much the final remedy will cost, which usually takes at least four to six years. Thus, they offer little relief to small business.

Moreover, as Clay notes in his paper, "De minimis settlements themselves have nothing to do with speed of cleanup or raising site-specific revenue." From the standpoint of small business, waiting four years for a "buyout" is akin to slow death: your contingent liability remains; your access to capital is impaired; your uncertainty over your future liability impedes investment and management decisions.

With respect to more mixed funding, this is another lofty goal that will never happen. There are good reasons why EPA has not used mixed funding: 1) its managers regard it as a violation of the "polluter pays" concept; and 2) it is enormously resource intensive. As long as EPA has the ability to recover costs using the joint and several club, it has little incentive to share costs and deplete the fund, especially when fund

TOTAL P.28

depletion means curtailment of cleanup activities at sites where there are no viable PRPs.

CONCLUSION

Our program is not radical; it is not a call to dismantle Superfund. Rather, it is an attempt to work together to create a comprehensive reform proposal that will improve Superfund for both the environment and everyone concerned in the Superfund process. We want to create a Superfund that works, and we believe that our proposal will do so. Judging from the support received by other proposals advocating liability reform, including the Treasury proposal, we are not alone.

Some dismiss the NETF as too far reaching in a political system which discourages boldness and puts a premium on playing it safe. But we think the conventional wisdom about what is possible in Superfund is crumbling. From the NAACP to small business, from oil companies to manufacturers, from local governments to individuals, the support for retroactive liability reform is growing. The frontier of what's possible in Superfund reform is unlimited if we're willing to focus on results, not ideology. Now is the time to create a Superfund that finally works, and works for everyone.

SUPERFUND TRANSACTION COSTS

The following is a list of the events which create Superfund transaction costs. Virtually all would disappear under the trust fund approach:

- EPA and initial PRPs pay contractors to search for other PRPs
- Negotiation between EPA and PRPs over liability
- Negotiation between EPA and PRPs over emergency removal terms
- Litigation by EPA to recover costs of emergency removal actions
- Formation and financing of PRP organization
- Analysis by companies of their waste contributions at the site, including possible hiring of contractors to perform this service
- Analysis by companies of the waste contributions at the site by other PRPs, including hiring contractors to perform this service
- PRPs hire contractor(s) to perform shadow RI/FS to double check work of EPA or work performed by other PRPs
- PRPs and EPA perform extremely detailed, "litigation-proof" RI/FS, reviewing extensive range of options at considerable cost to avoid subsequent litigation or prevail in it
- Negotiation between EPA and PRPs over scope of RI/FS if PRPs perform it
- Negotiation between EPA and PRPs over financing of RI/FS
- Negotiation between PRPs over who pays how much of the cost of the RI/FS
- Litigation between PRPs over allocation of RI/FS costs
- Lawsuit or UAO by EPA to compel PRPs to perform RI/FS
- Lawsuit by EPA to recover cost of EPA-performed RI/FS
- Remedial contribution litigation between initial PRPs and third party defendants
- PRPs hire contractors to comment on the ROD
- PRP challenges to the remedy chosen in the ROD
- Negotiations between PRPs and EPA over scope of RD/RA

- Negotiations between EPA and PRPs over RD/RA financing
- Negotiations between PRPs over RD/RA allocation
- Litigation between PRPs over allocation of RD/RA costs
- Suit or UAO by EPA against PRPs to compel them to perform RD/RA
- PRPs hire "shadow RD/RA" contractors to check EPA work
- EPA hires independent contractor to supervise PRP work
- Disputes between EPA and states; state legal and staff costs in overseeing EPA and PRP activities
- Continued effort by PRPs to spread costs to additional third party defendants through contribution lawsuits
- Cost recovery action for RD/RA expenses by EPA against PRPs
- Disputes and litigation between PRPs and insurers over insurers paying for PRP lawyers ("duty to defend")
- Litigation between PRPs and insurers over legal issues of contractual coverage of policies
- Litigation between PRPs and insurers over factual issues determining application of legal coverage
- Disputes between multiple insurers of single PRPs over relative responsibility for coverage
- Arbitration and/or litigation between insurers and reinsurers over coverage
- Negotiations between Government trustees and PRPs regarding natural resources assessments and damages
- Litigation re same
- Repetition of above related to allocation of natural resources damages among PRPs and third party defendants
- Repetition of insurance and reinsurance disputes related to natural resources damages

Jan M. Edelstein
Director

November, 19, 1993

The Honorable Frank R. Lautenberg
Chairman
U.S. Senate Subcommittee on Superfund, Recycling
and Solid Waste Management
506 Hart Building
Washington, DC 20510

Dear Senator Lautenberg:

I want to thank you again for the opportunity to testify before the Subcommittee on Superfund, Recycling and Solid Waste Management earlier this month on behalf of the National Environmental Trust Fund (NETF) Project. We commend your commitment to improving Superfund and were pleased to present the Subcommittee with our proposal for reforming Superfund's liability system.

We hope to work with you and the other Subcommittee members on enacting Superfund reforms that genuinely improve the program for the long term while easing its unnecessary harmful impact on all stakeholders as quickly as possible.

It is quite clear that we have a better opportunity than ever to reform Superfund to make it both beneficial to the environment and the economy. At your hearing, I was encouraged by the level of consensus that Superfund's liability system must be addressed, and across the board willingness on the part of industry representatives to accept higher taxes for some form of liability relief. Three of the four industry panelists agreed that eliminating retroactive liability must be the fundamental focus of reform. Even the Sierra Club stated that it was not wedded to the current liability system as long as certain safeguards were present in any reform package. This represents unprecedented common ground upon which real reform can be built.

Before I respond to your written follow-up questions, I want to acknowledge the outstanding substantive question from the hearing regarding the possible effect of budget rules on our proposal. We are working on that question and will get an awswer to you as quickly as possible, certainly by the deadline of November 29th.

Regarding your question about our membership, we are sending you under cover of this letter a copy of the actual petitions that our supporters signed. (We have pulled out those from individuals who requested their name not be released.) We hope that you will maintain our members' privacy by not distributing these petitions. We would like these returned as soon as possible.

We would be happy to make available to you any number of supporters to speak to you at length, from New Jersey or nationwide; or if you prefer, we could schedule a meeting with the NETF's membership committee.

You asked which of our supporters belong to trade associations that are also listed as supporters. We have surveyed our members to identify trade associations to which they belong. We do not under any circumstances "double count" names of individuals or organizations who have signed on in support.

1155 PENNSYLVANIA AVENUE, N.W. ◆ SUITE 900 ◆ WASHINGTON, D.C. 20004 ◆ TELEPHONE (202) 785-2140 ◆ TELEFAX (202) 223-7069

The National Environmental Trust Fund (NETF) is supported by hundreds of businesses, local governments, institutions and private citizens seeking reform of Superfund's retroactive liability system. Principal sponsors: American International Group, Inc., The Continental Insurance Company, Crum & Forster Insurance Companies, and Fireman's Fund Insurance Companies.

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I have also enclosed a copy of the letter and materials sent to our network requesting their support, as well as examples of regular communications we send to the network. Most recently, more than 470 of our supporters signed on to a letter urging the President to support the Treasury proposal.

As you can see by the materials, it has always been clear to our supporters that the funding mechanism for the NETF would be paid for by business. They also know that we have been working with other business and local government groups to develop the specifics of that funding mechanism, which have only been finalized in the past few months. Although we have not canvassed our members on the specifics of each line item, we are confident that these specifics are in keeping with their understanding of the source of funding for the NETF.

Finally, you have asked for details on the project's funding. We have always been candid with you, other Members of Congress, the Administration, the press, the public and our supporters about our funding. As I testified, since the project's inception nearly four years ago, funding has come from a select group of insurers in approximately equal amounts. We do not solicit contributions from our supporters nor do we claim that we have.

The NETF looks forward to working with you and the Subcommittee to develop Superfund reforms that enhance timely, effective cleanups, provide an efficient and fair funding mechanism and make the program work for all Superfund stakeholders.

Sincerely,

Jan M. Edelstein

Enclosures

Additional Questions for Ms. Edelstein

1. Please provide a list of the 1700 supporters of the NETF proposal, including a phone number and point of contact for each entity. Please indicate which of these supporters is a constituent member of any other identified supporter -- e.g., which of the individuals or companies identified is also a member of a trade association or organization also listed as one of the 1700 supporters.

2. Please describe in full detail each source of funding for the National Environmental Trust Fund Project, and include the level of funding (expressed in dollars per calendar year) contributed by each entity during each of the past four years. In addition, please include all contributions (expressed either in terms of dollars per year or in terms of services provided per year) that have been made for advertising, public relations, and other similar services related to making others aware of the NETF proposal.

3. Please reconfirm in writing your oral testimony that NETF and each of its supporters is willing to raise $4.5 billion to fund the Superfund cleanup program envisioned by your proposal. Please identify any NETF supporters that are not willing to raise that amount.

4. Please identify each of the 1700 supporters identified in your answer to question 1 that has specifically agreed to the specific funding figures to fund the NETF (i.e., $100 million tax on small business, $300 million charge to insurers, doubling of Corporate Environmental Tax) that were set out in your written testimony to the Subcommittee.

NATIONAL ENVIRONMENTAL TRUST FUND PROJECT

Jan M. Edelstein
Director

November 30, 1993

Senator Frank R. Lautenberg
506 Hart Senate Office Building
Washington, DC 20510-3002

Dear Senator Lautenberg:

I enclose my submission for the record in response to your question at the November 4, 1993 Superfund hearing regarding the impact of budget rules on the NETF proposal. If you or your counsel would like to discuss this submission with me in detail, I would be happy to meet at your convenience.

Thank you for your patience in this matter.

Very truly yours,

Jan M. Edelstein

1455 PENNSYLVANIA AVENUE, N.W. ◆ SUITE 900 ◆ WASHINGTON, D.C. 20004 ◆ TELEPHONE (202) 783-2440 ◆ TELEFAX (202) 223-7069

Founding sponsors: American International Group, Inc., Crum & Forster Insurance Companies, and Fireman's Fund Insurance Companies

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SUBMISSION FOR THE RECORD

ADDITIONAL TESTIMONY BY JAN M. EDELSTEIN
on behalf of the
NATIONAL ENVIRONMENTAL TRUST FUND PROJECT

The National Environmental Trust Fund Project (NETF) has proposed the replacement of Superfund's retroactive liability based fundraising mechanism with an increased Trust Fund, paid for by a broad range of businesses. During the November 4, 1993 hearing, Chairman Lautenberg suggested that the larger trust fund proposed by NETF could not be spent under current budget rules without decreasing spending in other segments of the HUD/Independent Agencies Appropriation. Further, others have asserted that there is no guarantee that increased funds placed into a trust fund would be made available for use on Superfund program activities.

It should be noted that any increase in the size of the Trust Fund or Superfund spending that might be advocated by citizen groups, environmentalists and others would also raise these concerns.

The confusion over violations of the cap and ceiling as well as Government's capability to segregate and expend funds for a specific purpose is understandable given the complexity of the statute and rules governing the process. Nevertheless, working together, the Executive and Congressional branches can increase spending in the Trust Fund under the current budget rules by increasing revenues into the trust fund.

Section 14003 of OBRA 1993 extended the Budget Enforcement Act's "pay-as-you-go" requirements until 1998. Therefore, the BEA permits increased spending when revenues are secured to offset the additional spending. Raising new revenues could provide for additional funding within the existing caps, consistent with a change of the authorizing legislation and BEA's pay-as-you-go requirement. Increases in spending as proposed by the NETF can be accommodated under the Budget Enforcement Act because the proposal would provide the revenues to finance the increased spending from business to finance any necessary increase in the cap. Replacing retroactive liability with a larger Trust Fund as proposed by the NETF would be deficit neutral and allowable under BEA. Raising the cap may not be necessary because it is possible that Congress will have additional room to increase spending under the existing cap. Although Committee action could be challenged by a point of order on the Senate floor, it is very unlikely since additional spending would be deficit neutral.

Regarding ensuring the use of Trust Fund revenues for

Superfund program activities, the problem of the Appropriations Committee not appropriating all of the Superfund Trust Fund resources to clean-up activities can be avoided in the future by enacting a permanent indefinite appropriation. The permanent indefinite appropriation would ensure that all of the dedicated receipts are available to finance clean-up activities without further appropriation by the Congress. Examples of this type of mandatory Trust fund include the Wallop-Breaux Trust Fund (receipts from fishing and hunting licenses and taxes on equipment which are used to finance the acquisition of wildlife refuges) and Unemployment Compensation Trust Fund.

U.S. Senate

Committee on Environment and Public Works

Subcommittee on Superfund, Recycling and Solid Waste Management

Testimony

of

Michael S. McGavick

on behalf of the

Superfund Improvement Project

of the

American Insurance Association

November 4, 1993

The American Insurance Association ("AIA") is a trade association comprised of 254 insurance companies which write a large percentage of the commercial property and liability insurance sold in the United States. AIA is vitally concerned about the efficiency and effectiveness of the current Superfund law, as well as its financial implications for property/casualty insurers, other affected industries, and the American economy as a whole. We appreciate the opportunity to testify before this committee as it considers the very crucial issue of the Superfund liability system.

Our testimony sets forth a brief history of Superfund, describes how the current liability system works, and compares its practical application to the goals of the Superfund statute. We then describe how the insurance industry came to be involved in Superfund and why liability reform is so important. Finally, we discuss a liability reform which could benefit all Superfund stakeholders.

Background

Near the end of a lame-duck session in 1980, Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act, commonly referred to as "Superfund." The main purpose of Superfund was to address a growing public concern: the cleanup of old hazardous waste sites, many of them inactive or abandoned years before.

Superfund was originally created as a five-year, crash program and was given $1.6 billion to clean up Superfund sites around the country. Now, almost thirteen years after Superfund's enactment, the Nation has suffered a vast waste of its resources for stunningly little progress: over $11 billion in federal funds, combined with still more billions from the private sector, have been spent trying to implement the program, yet by the start of FY 1993, only 3 percent of the 1,250 sites on the National Priorities List had been cleaned up. Approximately 97 percent were still somewhere in the cleanup process. At the same time, 149 sites were listed as "construction complete" (12 percent).

Superfund: An Unprecedented Liability System

The most controversial issue in Superfund is the statute's retroactive, strict joint and several liability system. This liability system is unprecedented in breadth and scope. Simply put, it is a "deep pockets" theory of liability, intended to maximize the chances that *someone,* regardless of fault, can be forced to pay for the cleanup of each waste site. This is the most Draconian standard of liability ever enacted into American law.

The extraordinary reach of the Superfund liability system can be seen by examining each of its parts:

-- ***Retroactive liability*** means that parties can be held liable for cleanup of waste that was disposed of decades before the 1980 enactment of Superfund.

-- ***Strict liability*** means that no negligence or fault must be shown for a party to be held liable, but rather only that the party generated, transported, or disposed waste at the site, arranged for the transportation or disposal of the waste, or owned or operated the site at any time. In addition, no proof is required to show that the pollution at the site was caused by the waste disposed of by any particular party at the site.

-- ***Joint and several liability*** means that all parties who contributed waste to a site, or have owned or operated the site, can be held liable for 100 percent of the cleanup cost for the entire site. In other words, EPA

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can (and often does) declare one or two parties responsible for the cleanup cost of an entire site, even if hundreds of other parties contributed waste. Moreover, it is irrelevant that the parties held responsible by EPA may have contributed only a very small part of the overall volume of waste.

In summary, virtually anyone who in any way was connected with a Superfund site or its contents can be held liable. Liability attaches regardless of how much waste was generated, transported or disposed; when it was generated, transported, or disposed; how much care was taken; or whether the generation, transportation, or disposal complied with all laws in existence at the time.

Not only large companies have been found liable for cleanup, but also medium and small businesses, schools, hospitals, nursing homes, cities, towns, and civic organizations. Even state and federal agencies are frequently found liable. The ensuing litigation over who will be a "potentially responsible party" ("PRP") and how cleanup costs will be allocated among PRPs, greatly slows the cleanup process while incurring enormous costs -- known as transaction costs -- unrelated to cleanup.

Goals Versus Practical Application of the Liability System

In theory, the Superfund liability standard was intended to accomplish several objectives, including the following: (1) to minimize government expenditures for site cleanups; (2) to assure that "the polluter pays" for pollution caused; (3) to encourage

voluntary cleanup of hazardous waste sites; and (4) to provide incentives for environmentally correct waste disposal practices in the future.

All of these are commendable objectives and should be included in any comprehensive environmental policy program. We question, however, whether all or any of these objectives are being adequately met under the current Superfund law.

Minimization of Government Expenditures: The Superfund liability system was intended, in part, to provide a mechanism through which responsible parties would pay the full costs of investigation and cleanup on a site-specific basis. The Hazardous Substances Trust Fund was intended to operate as a revolving fund, which would continually be replenished by cost recoveries and, when necessary, by taxes on business.

In practice, however, government funds continue to constitute a major portion of Superfund expenditures. According to EPA's budget office, appropriations to the Trust Fund from 1981 through 1993 totalled $11.3 billion dollars.

While there are no definitive measures of PRP spending during the same period, the estimated value of all settlements reached by EPA at enforcement lead sites, plus recoveries received at fund lead sites, totals approximately $5.3 billion.

Although the proportional share of settlements and recoveries has been increasing, federal expenditures continue to outpace private party outlays, and there is often a substantial delay between the time EPA expends funds and recovers them from

PRPs. A huge percentage of these federal and private costs are incurred by operation of the Superfund retroactive, strict joint and several liability system, in the effort to determine "who shot John," years or even decades ago. The system doesn't have to work this way.

"Polluter Pays": Superfund's sweeping liability system also was intended to punish "polluters," by requiring them to pay all costs associated with cleaning up hazardous waste sites. In practice, however, there are significant discrepancies between the theory of the "polluter pays" principle, and the application of retroactive, strict, joint and several liability. Indeed, the Superfund terminology does not assign liability to "polluters," but rather, to "responsible parties" who may have had limited involvement with a Superfund site or its hazardous wastes.

Under the doctrine of retroactive liability, there is no point in the past beyond which liability will not attach. There is liability for activities which occurred years or even decades ago, and which were consistent with then existing legal requirements and scientific knowledge. It stretches the imagination to call many such parties "polluters," and yet they must pay under the current law.

Moreover, joint and several liability under Superfund means that parties which sent an extremely small quantity of waste to a site can be held liable for all, or a substantial portion, of cleanup at the site. There is no threshold requirement for determining liability.

Although EPA legally has the discretion to alleviate the effects of joint and several liability through the *de minimis* settlement, mixed funding, and non-binding allocation of responsibility ("NBAR") provisions of the SARA amendments, these tools have been used infrequently.

The combined effects of retroactive, strict, and joint and several liability in the Superfund context suggest that it is no longer necessary to prove that those found liable for cleanup costs did anything wrong, or were substantially responsible for the hazards present at a site. While this sweeping scope of liability might increase the chance that the government will recover its costs, it is inconsistent with the notion of corrective justice which purportedly underlies the "polluter pays" principle.

Incentives for voluntary cleanup: The liability system also was seen as a means to encourage voluntary site cleanups by those who wish to avoid the substantive and procedural hurdles of the Superfund cleanup process. While one occasionally does hear about "midnight cleanups," these appear to be few and far between, and are most likely to involve single party sites which do not present cost allocation issues.

Although failing to provide incentives for voluntary cleanup, the liability system does encourage environmental audits in conjunction with real estate transactions. Unfortunately, such audits may be less likely to result in voluntary site cleanup than abandonment of a site in favor of undeveloped land.

While environmental audits are useful informational tools, the real goals of the statute -- the cleanup of hazardous waste sites -- are not necessarily being met by the liability system.

Moreover, it is often areas which could best benefit from redevelopment which suffer from the disincentives provided by the retroactive liability system. Businesses now avoid old industrial sites, fearing that they may be purchasing Superfund liability.

Improved waste management practices: Another goal of the Superfund liability system was to encourage sound waste management practices among firms which wish to avoid liability in the future. Indeed, the threat of prospective Superfund liability has caused large businesses to practice better waste management.

However, the *retroactive* application of Superfund liability does nothing to achieve the objective of influencing future waste disposal practices. Regardless of the statute's goals with respect to future behavior, it cannot create any change in behavior which occurred more than a decade ago. Even if the prospective application of strict, joint and several liability can be said to have a positive effect on future waste disposal practices, such an effect is completely absent when the liability system is applied retroactively.

Direct and Indirect Costs

Unfortunately, there are no comprehensive studies which measure the direct and indirect costs of the Superfund liability

system. Practical experience, however, suggests that the following direct and indirect costs are linked to Superfund liability: high transaction costs; economic uncertainty; the use of "green" sites, as opposed to existing industrial sites, for future development; adverse effects on small business; and an increase in bankruptcy filings by responsible parties, with consequent job loss by employees.

Transaction Costs: The liability provisions of Superfund inevitably create a situation where PRPs spend inordinate time and money determining who will pay for cleanup costs, rather than putting their efforts into cleaning up. And where the Trust Fund is used to pay for cleanup, there is little incentive for government contractors to be efficient.

The threat of retroactive, strict joint and several liability has led to extensive litigation at virtually every stage in the process. Before a site can be cleaned up, there is controversy about whether to include the site on the National Priorities List; an extensive search for PRPs; the conduct of a remedial investigation and feasibility study ("RI/FS")(and often more than one); and the selection of appropriate remedies. In addition, more time and money is expended in disputes among responsible parties with respect to final allocation of shares, and between responsible parties and their insurers regarding the applicability and scope of insurance coverage. At the most complex sites, litigation can last for years and involve millions of transaction cost dollars.

How much has actually been spent on transaction costs? The General Accounting Office reported earlier this year in testimony before the House Energy and Commerce Committee, Subcommittee on Transportation and Hazardous Materials, that 45 percent of the federal Superfund through FY 1992, some $4.7 billion, went to "support activities" (44 percent went for actual cleanup; 11 percent for enforcement). According to GAO, EPA claims that 70 percent of Superfund outlays have been made for remedial activities, but this figure includes research and development, and community relations.

Transaction cost information for the private sector has been difficult to assemble, largely because of the diverse number of parties, and the lack of site-specific accounting. In the most authoritative study so far, a 1992 study by Rand, it was reported that average transaction costs associated with insurance claims paid under Superfund were 88 percent of total costs. Even on closed claims, transaction costs averaged 69 percent, more than double the average for other general liability claims. Rand found that insurer transaction costs were running at $400 million per year. Transaction cost expenditures for PRPs must be at least equal to that figure.

It is important to recognize that transaction costs, while representing money that is diverted from site cleanup, are a legitimate expenditure by the parties which are incurring them. Indeed, given the enormity of cleanup costs and the potential consequences of the liability system, PRPs and insurers have a

responsibility to their employees, customers, shareholders, and communities to exercise all legal remedies and defenses which are available to them.

Nonetheless, when looking at the system as a whole, one would think that an alternative to the current liability system could reduce transaction costs and attendant delays. If one were redesigning the present system, an alternative that channels money directly to cleanup, rather than to litigation, would provide substantial efficiency gains.

Economic Uncertainty: The current liability system maximizes uncertainty about how the costs of cleanup will be allocated and paid. This uncertainty has negative economic consequences, making it more difficult for PRPs and insurers to raise money in capital markets to conduct their businesses. The smaller the PRP enmeshed in Superfund liability, the greater this problem becomes. (The same effect is felt by municipalities which seek to borrow.) By deferring capital investments, inhibiting or preventing job creation, delaying the return of property to productive use, and increasing the uncertainty of business transactions, the current liability system helps to impede economic revitalization of our country as a whole.

Use of "Green Sites": Under the Superfund liability standard, current site owners can be held responsible for cleaning up waste which was deposited by or under the direction of a prior owner. While some proponents of the liability system maintain that it encourages purchasers to require sellers to

clean up their land prior to a real estate transfer, it also promotes the development of "green" sites -- those which are in pristine condition -- rather than the redevelopment of land which has already been used for industrial purposes. By using "green" sites, purchasers can be sure that there are no hidden environmental problems which could result in significant cleanup costs.

However, from a land-use perspective, this strategy reduces the number of "green" sites, an environmental resource that may never be fully recoverable. This result might be avoided if the liability system were changed to soften its impact on subsequent owners with no direct relationship to hazardous wastes found at a site.

Adverse Effects on Small Business: As reflected in recent Congressional hearings on this issue, small businesses are especially vulnerable under the current liability system. Unlike the large PRPs, they do not have experienced in-house resources to address the technical and legal issues confronting them. Nor do they have the financial resources to pay large cleanup costs or litigation expenses. Private owners may find themselves subject to substantial unforeseen liabilities when they acquire a small business or property. EPA *de minimis* settlements do not preclude state enforcement or third party actions, and prolonged uncertainties preclude borrowing, deter capital investment, and, in the worst case, drive businesses with small margins and low financial resources into bankruptcy.

Bankruptcy: The high costs of Superfund cleanup, and the potentially disproportionate impact of the liability system, can force an otherwise healthy company into bankruptcy. A recent ruling by the Second Circuit Court of Appeals that Superfund claims are dischargeable in bankruptcy could increase the number of firms which file for bankruptcy as a result of their Superfund liabilities. Such bankruptcy filings can have several negative consequences. Bankruptcy (at least in the case of liquidation under Chapter 7) results in greater concentration among a firm's competitors, job losses for its employees, and economic dislocations throughout the local economy. Moreover, a bankruptcy filing stays all claims against the bankrupt party, thus possibly delaying the cleanup of any Superfund sites with which the bankrupt party is involved. Bankruptcy increases the proportionate share of other responsible parties, regardless of their actual involvement at a site. Some of those might also choose the bankruptcy alternative. All of these consequences could be avoided for old waste sites if the retroactive liability system were eliminated.

Insurance Industry Involvement in Superfund

The insurance industry was brought into the Superfund liability quagmire by PRPs facing liability for cleanup of old waste sites. Insurers are involved in two different ways.

First, as PRPs are notified of their potential liability or are assessed their share of cleanup costs, many have claimed that liability for their past hazardous waste management practices is

covered under old insurance policies in effect at the time the waste was disposed of at the site. Insurers argue that these old policies do not cover Superfund cleanup. These PRP law suits, however, threaten to expose the industry to multi-million dollar claims. The result is time-consuming, expensive insurance coverage litigation that forces both PRPs and insurers to spend additional money on more lawyers and consultants.

The second way insurers are involved in Superfund disputes is in the defense of PRPs. While reserving the right to later have the coverage issue resolved, insurance companies often defend the policyholder against claims the policyholder contends are covered by the policy. Thus, insurers frequently wind up doubly involved in Superfund litigation. This fuels the litigation fires: the lawsuits are "free" to the PRP -- paid for by the insurers -- as they try to reduce their own exposure.

All levels of the state and federal judicial system are currently occupied in the interpretation of insurance policies, often written years or even decades before the enactment of Superfund. There are a number of specific issues of contention which make this litigation extremely complex. Our purpose in mentioning the coverage litigation is not to delve into these issues, or to give the insurance industry's perspective on them, but simply to underscore the unsettled nature of the law with respect to insurance coverage, and the concomitant uncertainty about the potential effects of Superfund on property/casualty insurers. Most legal experts believe it will take many years for

all of the issues involved in the coverage litigation to be resolved.

Financial Implications For Property/Casualty Insurers

No one knows the ultimate financial implications of Superfund costs for the property/casualty insurance industry. Much will depend on the total number of sites which need to be cleaned up; the cleanup standards which are applied; the cost and availability of the chosen technology, as well as its permanence; and the percentage of costs allocated to insurers as a result of coverage litigation which is pending in courts throughout the country.

Robert Litan, of the Brookings Institution, has examined the implications of potential Superfund liability for the insurance industry [Robert E. Litan, "Superfund: Assessing the Program and Options for Reform", Brookings Institution (1993)]. Litan asserts that it could have significant adverse effects throughout the entire economy. He says that losses of $30 to 50 billion could fall on insurance companies whose total capital reserves total about $70 billion. Losses of this magnitude would be more than double payments for the most economically devastating natural disaster to date, Hurricane Andrew. Litan argues that they would devastate the industry: some insurers would become insolvent; others would have to curtail their activities. The unavailability of commercial casualty insurance would ripple through the entire economy, as the S & L crisis did, making it more difficult to raise capital as well as putting many people

out of jobs.

To whatever extent insurance companies are required to pay Superfund-related costs, funding for such payments would have to come out of their surplus, or net worth. Surplus, in turn, is a factor used by state regulators (through application of premium/surplus ratios) in determining how much business an insurer can write, while remaining on a sound financial footing. If there is a reduction in surplus because of Superfund, there would be a corresponding regulatory limitation on the extent to which insurers can serve all of society's insurance needs, in lines such as automobile, homeowners, and workers' compensation.

In addition, Superfund is likely to have a disparate impact on individual companies, depending on the amount of commercial liability coverage they have written, when it was written, the specific language of applicable contracts, and how those contracts have been or will be interpreted by the courts. Individual insurers which are the most adversely affected could suffer serious financial problems, or even insolvency, while others may face few direct losses. However, individual company insolvencies would affect the entire industry because industry-wide guaranty funds would be used to pay claims against an insolvent insurer.

Frankly, we believe that there are simply too many unknowns to predict the ultimate costs of Superfund for the insurance industry at large or for individual companies. But, it is clear that these costs have the potential to be enormous.

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Liability Reform

A vigorous debate is now taking place among Clinton Administration cabinet departments over the future of the Superfund program. Central to this debate is the Superfund retroactive, strict, joint and several liability system.

The Treasury Department has proposed broad reform of the Superfund liability system. Specifically, in a position paper dated August 24, 1993 (see Appendix A) Treasury proposed:

(1) to eliminate retroactive liability prior to December 11, 1980 (the date Superfund was enacted) for parties whose actions at a waste site were in compliance with applicable law;

(2) to replace strict joint and several liability with strict, apportioned liability for waste disposed of after December 11, 1980; and

(3) to have Superfund pay for cleanup of any "orphan" shares created.

AIA has carefully reviewed the Treasury proposal. We realize that many details have yet to be developed. Nonetheless, we have concluded that the Treasury proposal is the only concrete idea yet put forward which comes closest to addressing the most serious flaws in the current Superfund liability system. Therefore, we strongly support the Treasury proposal. Our consideration of the benefits of the Treasury proposal are listed below.

Benefits of the Treasury Proposal: The Treasury proposal would:

(1) save billions of dollars by substantially reducing or eliminating most of the enormous transaction costs to private parties and the government which are now caused by litigation over responsible party liability and insurance coverage related to retroactive liability;

(2) leave the "polluter pays" principle unchanged, by simply increasing the portion of cleanup costs recovered through the taxes businesses pay for the cleanup of pre-Superfund waste, while decreasing the portion of this money collected through litigation;

(3) encourage pollution prevention by retaining strict liability, thus retaining positive incentives for proper waste management in the future;

(4) contribute to faster cleanups by eliminating litigation over liability for pre-1980 waste and by eliminating time-consuming searches for old waste disposers;

(5) encourage economic redevelopment, particularly in urban areas, by allowing businesses to acquire and redevelop old plant sites without the present fear of "purchasing" Superfund liability if they buy "old" land;

(6) provide the economic certainty which is vital for businesses to raise capital and engage in financial transactions and long range planning; and

(7) save jobs, especially in the case of small and medium sized businesses which, caught up in the present retroactive liability system due to old practices, often cannot afford the sudden imposition of these huge costs.

The Issue of Funding: Opponents of the Treasury proposal primarily argue that it would result in the creation of a public works program to clean up pre-1980 waste, requiring a major tax increase.

However, elimination of retroactive liability can be accomplished without substituting a new public works program. Cleanups could be managed by the private sector (just as they are now at many Superfund sites), with cleanup costs reimbursed from the Hazardous Substances Trust Fund as the various stages of cleanup are completed.

The Treasury proposal would require additional funding, to pay for the orphan share created by eliminating retroactive liability for waste disposed of prior to December 11, 1980. The question is: How much additional funding would be required and what would be the source of that funding?

In a memorandum dated September 30, 1993 and circulated to other federal agencies, EPA estimated that the Treasury proposal would cost an additional $880 to $926 million per year to pay for the cleanup of pre-Superfund waste. (See Appendix B, EPA Cost Analysis dated Sept. 30, 1993).

We would like to make it clear to this Committee that AIA is willing to step forward and participate in the funding of the liability reform proposed by the Treasury Department. Others in the private sector have also indicated a willingness to do so. It is our solid belief that the savings that would be realized by this liability reform would substantially outweigh the cost of implementing the Treasury proposal.

Response to Concerns About the Proposal: Despite what we believe to be the obvious benefits of the Treasury proposal, concerns have been expressed about possible adverse effects of adopting, or even considering the proposal. The main issues, funding and the creation of a public works program, were addressed above. Other concerns are addressed below.

Concern: The mere existence of the proposal will slow the pace of current Superfund cleanups as parties anticipate a change in the law.

Response: Cleanups will continue at their normal pace during the transition to a reformed liability system. EPA already has the statutory authority to compel the parties at Superfund sites to continue ongoing cleanups (Section 106 orders). EPA has not hesitated to use this authority in the past and should continue to use it while Congress is considering Superfund reauthorization.

Concern: It will create new litigation and transaction costs.

Response: Adoption of the Treasury proposal would substantially reduce or completely eliminate most transaction costs and

litigation, since the vast majority of these costs are related to retroactive liability and insurance coverage litigation associated with retroactive liability.

Concern: It will increase the potential for contractor waste, fraud, and abuse, given past examples of EPA contractors.

Response: A cleanup system supervised by the private sector would avoid the problems which have been associated with EPA contracting practices in the past. Moreover, the actual experience with Superfund cleanup to date has been that contractors overseen by the private sector have been much less expensive than those hired under Federal contracting rules.

Concern: It will prevent the development of a consensus and thus jeopardize the chances of Superfund reauthorization in 1994.

Response: The only existing consensus on Superfund is that the current program is broken, a fact with which business, environmentalists, municipalities, and many Members of Congress agree. Ignoring the problems presented by the retroactive liability system will not make them go away. Billions will still be spent on litigation unless the problem is corrected. In any event, Superfund reauthorization will not be a simple matter, given major disputes over proportional liability, municipal liability, remedy selection, and cleanup standards, as well as other issues. But credible reform can be achieved in 1994 only if these issues are addressed, rather than ignored. Simply put, the solution must be bigger than, not smaller than, the problem. Mere tinkering will fail.

Additional Liability Alternatives

As we stated earlier, the Treasury proposal is the only concrete proposal offered to date which resolves the major issues presented by the retroactive liability system. That does not mean, however, that AIA sees the Treasury proposal as the only possible answer. We are not ideologically attached to eliminating retroactive liability. While it is the best answer we have seen for America and for our industry, we continue to search for any alternative which solves the difficult problems created by retroactive liability and we are certainly willing to work with this committee to find such a solution. We will only support approaches which provide faster cleanup at fairer cost for all Americans and which would impose on insurers only those costs which are fair, affordable, and predictable.

Conclusion

We appreciate the opportunity to share our views on the current performance of the Superfund liability system, as well as options to improve it. We look forward to working with the Chairman, the members of the Subcommittee, and others in Congress and the private sector to develop creative and mutually acceptable approaches to better enable the law to meet its underlying objectives while minimizing unfairness and economic disruption.

[Note: Attachments to this statement have been retained in committee files:]

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Government Affairs
Department

TESTIMONY OF THE

PRINTING INDUSTRIES OF AMERICA

ON REFORM OF THE

SUPERFUND LAW

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Mr. Chairman and members of the Committee, my name is Benjamin Y. Cooper. I am senior vice president for government affairs for the Printing Industries of America. In addition, I serve as a member of the Board of Directors and Environment Committee Chairman for the Small Business Legislative Council, a permanent coalition of approximately 100 small business trade associations. On behalf of small businesses throughout the United States, I want to thank you for conducting these important hearings and providing us an opportunity to express our concerns about the liability issue in the Superfund Law. I would also like to add a special note of appreciation for the outstanding work of the staff on this committee who have made an enormous effort to assure that our concerns have been heard.

I regret to say Superfund has been a disaster for small business. I am aware of no law which evokes such negative reactions in the small business community. Reform is not only necessary; we feel it is essential and should be the environmental legislative priority for this Congress. I will attempt to summarize our concerns and offer some suggestions for change. Prior to reviewing the issues, I want to state from the outset that we would not support a partial solution to Superfund which only addresses limited issues. We believe our problems can only be solved through a comprehensive reform of Superfund. We would not support an exemption or limited liability for certain groups in Superfund without looking at the broader issues. Likewise, we do not support a small business exemption to Superfund. We feel very strongly that we have a role

to play in the cleanup of the nation's priority waste sites.

Many of us in the small business community have been reviewing a variety of proposals to reform Superfund. These proposals range from maintaining the status quo to proportional liability scheme to a broad based funding approach. While these proposals contain positive reform elements, it has been difficult for many of us in the small business community to endorse any of these proposals. We have decided that for now, we will not endorse any overall reform proposals. Instead we will continue to support reform while focusing our efforts to address the small business concerns of the law.

I want to explain what I mean by the small business concerns with Superfund. Small business people have characteristics that are similar virtually without exception. These people are responsible for all aspects of the company's operations from personnel to sales to environmental management. In addition most small businesses are family businesses. In fact, a significant number are multi-generation family businesses. Ironically, small business is often plagued by passing the company from one generation to another. In Superfund especially, the actions of fathers, mothers, grandfathers, and grandmothers often come back to haunt the heirs. Had these companies had the foresight to sell or go out of business these problems might have been adverted. However, the law, whether Superfund or any other law, should not serve as a disincentive to family business. Those small companies which do succeed simply do

not have the ability to deal with the legal complexities of Superfund. Laws such as Superfund require specialties different from those of printing, dry cleaning, or baking.

Without question the single most important issue facing small business under the Superfund Law is retroactive liability. Small firms simply do not understand how they can be required to pay for the cleanup of waste legally disposed ten, twenty, thirty or more years ago. As a general rule, these firms were not even asked to maintain records of waste disposal until 1987, so they did not know, did not have to know, and usually could not have known where their waste was going prior to that time.

We are told that retroactive liability serves as an incentive to manage waste in a more environmentally appropriate manner; however, we cannot understand how punishing someone for what they did legally in the past can encourage them to act responsibly in the present or future. In fact, changing the rules after the fact as we have done under Superfund would tend to discourage responsible behavior since it is impossible to predict whether the actions of today will be legal in the future.

Similar to the problems with retroactive liability are those associated with the ability of parties to sue one another during and after the Superfund settlement process. Small companies are generally identified as de minimis contributors. The Environmental Protection Agency will indicate a settlement amount or at least a

likely amount. Unfortunately, the other parties to the site or outside groups are free to seek a larger settlement through the courts. Small firms who are drawn into these lawsuits are often represented by counsel with limited experience in Superfund issues and the companies retaining the counsel are often not aware of the magnitude or the time involved in reaching the final disposition of the issue.

Let me provide one concrete example of a company which has faced this third party lawsuit problem. One of our members was named in a Superfund site for waste which was part of ordinary trash pickup by the city in the 1950's. This company was told by EPA in 1989 that its de minimis settlement would be about $2500. Unfortunately, the company was subsequently sued by the other potentially responsible parties for $250,000. Since 1989, this company of 73 employees has paid $97,000 to defend itself against that suit. The owner has still not been asked to pay the $2500, nor has the site been cleaned up. This same company has been notified that it is a likely party in two other sites from the same time period.

We are pleased that EPA is interested in expediting the de minimis settlement process. They are aware that these settlements, even when not complicated by third party lawsuits, can take five to seven years to resolve. They are also aware that small firms spend an average of three dollars in transaction costs to every dollar they pay for settlement. Small firms have a right to know what to expect and to get the matter resolved quickly; however, unless

there is protection from lawsuits and retroactive liability, an expedited de minimis settlement procedure is virtually worthless.

Unfortunately, we have reached the part of the testimony where we said what we do not want, but where there is still a bill to be paid. Those of us who represent small business in the environmental area feel very strongly that small business needs special consideration because of the expense and complexity of the environmental regulations; however, we do not feel we should be exempted from our responsibilities to be part of the solution. In view of the need to be part of the resolution we would be open to the establishment of the fee structure for small firms and de minimis contributors tied to waste disposal. We would consider alternative suggestions as well which would address and help resolve this issue. This fee would be dedicated to the cleanup of sites on the national priorities list.

We believe many other small businesses would welcome as part of overall Superfund reform the following:

- the elimination of retroactive liability for small business except that liability would be retained for any company whose waste disposal practices were in violation of the law at the time of disposal,
- protection from lawsuits for those companies which have been identified by EPA as de minimis contributors to a waste site,

- an expedited de minimis settlement procedure, and
- the establishment of a fee tied to waste disposal or some other financing scheme to provide revenue from the small business sector for Superfund site cleanup.

At this point we have no idea what amount of money is required from the small business community. Some have speculated this amount may be $100 million. If the fee were tied to hazardous waste manifests, one might expect an annual fee of about $100 for this purpose since there are about 1.2 million small QUANTITY generators of waste in the United States. We do not presume to have the final answer on the fee or to what the fee should be tied. It would be ideal if it were tied to waste since such a program would provide a measure of pollution prevention incentive. Of course, as I have indicated, we would be open to other suggestions regarding ways to generate the needed revenue.

We are aware that the elimination of retroactive liability is a dramatic departure from the current Superfund law; however, it is essential to small business. The date selected -- January 1, 1987 -- relates to the effective date for the implementation of the small generator provision of the Resource Conservation and Recovery Act. Prior to that time, small business generally was not required to maintain records of waste disposal. Consequently, small companies are in an unusually difficult position when challenged on waste practices of the past. Although we are aware that many companies still do not have adequate records, the law is clear on

their responsibility to maintain such records.

It is also important to understand that no part of our proposal is valid without the other parts. Just as we would have difficulty in supporting an exemption for small business as a stand alone measure, no single part of the points mentioned above are valid without the others. For example, an expedited de minimis settlement procedure provides little help for small business unless they can be protected from subsequent legal action. Protection from legal action is important but without an expedited settlement procedure, companies may still be trapped in five to seven year settlement procedures during which time they will have spent more than the settlement amount on transportation, legal fees, and lost time. Likewise if there is no funding mechanism, the government loses the money it is currently getting from de minimis contributors.

In conclusion Mr. Chairman, we urge this committee and the Environmental Protection Agency to resist the temptation to view the nation's business community as environmental criminals. Our members are overwhelmingly honest men and women who have their community's interests at heart and they do not want to be part of any environmental problem. We have to become sensitive to the fact that when we toss around terms such as "make the polluter pay," we are talking about these small firms. We also are talking about ourselves.

We thank you again for the opportunity to participate in this important hearing and pledge to work with you toward a solution to this problem.

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Testimony of Carl Pope
Executive Director, Sierra Club
before the
Senate Committee on Environment and Public Works
Regarding Superfund Liability

November 4, 1993

100% POST-CONSUMER, NON CHLORINE BLEACHED RECYCLED PAPER

TESTIMONY OF CARL POPE ON SUPERFUND LIABILITY

I am pleased to be with you this morning to discuss issues arising under Superfund liability. While the Sierra Club regards these issues as important, and they certainly are central to much of the controversy that surrounds Superfund, I must note that we believe the key issue the Committee will address is cleanup standards or remedy selection. That is because the most controversial issues in Superfund are the slowness of the program, and the cost of the program. We believe most evaluations of the program show that the long time it takes to identify and select long term cleanup remedies and the cost of those remedies are the chief reasons this program is regarded as delivering too little cleanup too late.

Back when Superfund was first enacted and again when it was reauthorized, a good deal of the public concern to which Congress responded was the public concern over "ticking time bombs" of toxic waste. Communities living near these toxic waste sites wanted some assurance that they would not have to worry that they would have to live for decades in fear that the toxic time bomb in their community would "go off". In the cleanup debate that this Superfund reauthorization will undertake, the Sierra Club's chief concern is that Congress will accede to weakening cleanup requirements under Superfund that result in efforts that simply make the "ticking time bombs" tick more slowly. This is not what the American public wants or deserves.

Today, we are here to talk about Superfund liability which is essentially a discussion about <u>who pays</u>. While there has been a lot of rhetoric about

fairness and polluter pays versus a tax based no fault lability system, I want to cut to the heart of the debate to make some fundamental points.

First, the fact that anyone has to cleanup toxic waste is not fair. From a purely objective standpoint the way decisions are made about toxic waste generation and disposal are not very rational. We as a nation should generate much less toxic waste and dispose of it much more carefully than we do today.

Second, it is less fair to make taxpayers pay for Superfund cleanup than to make the generators of the toxic waste that created the site pay for cleanup, even though they acted innocently and legally. Had the toxic waste not been generated and disposed of at the site, there would be no need for cleanup. While some argue that society benefitted from the economic activity of those who generated these wastes, it pales in comparison to the direct benefit to bottom line profit enjoyed by commercial generators of toxic waste who used cheap but hazardous disposal.

Third, taxpayers already pay a significant share of Superfund. The Environmental Income Tax on businesses and general revenue contribute more than 25 percent of the approximately $2.5 billion that is spent on Superfund cleanup each year. If the general revenue statutory share were fully appropriated, that share would rise to nearly one third.

Fourth, the "fairness" issue is not different for Superfund sites created in the future than for sites created in the past. Most experts believe that a substantial number of the sites being operated today are not designed and operated well enough to prevent the need to take cleanup action at these sites

in the future. While most people believe that strict, joint and several lability must be applied in the future, the impact is fundamentally no different than applying this liability regime to disposal sites created in the past. Those who contributed to the site are being held accountable even though they acted innocently and legally in most cases. The only difference is that some generators have a better understanding today of their potential future liability and can act upon it. Hopefully, there will be fewer such sites.

Therefore, it is with these four basic points in mind that we come to the Committee and ask that the current liability system, with some necessary modifications, be preserved. These four points also anchor our opposition to the public works, tax-based approach that would eliminate strict, joint and several liability. We believe that the current system can be made to work better and fairer. We further believe that major changes to the current system will undoubtedly lead to significant disruption to current cleanup activities in the short term and a substantial risk of a much diminished cleanup effort at toxic waste cleanup in the long term. Slow as cleanup progress has been under the current program, it could well be brought to a stop by radical legislative changes.

The Sierra Club asserts that those who advocate and support major changes to the current liability system should bear a heavy burden of identifying <u>who will pay for cleanup</u>, and demonstrating that the new funding system <u>will provide the same level of cleanup</u>, or more, than the present system. Some proposals to reform the current liability system involve major new tax revenue to pay for such things as orphan shares and government liability allocation

costs. Other proposals would totally eliminate retroactive liability and use a tax-based fund to supplant all the cleanup currently being performed by responsible parties. Those who want to adopt such proposals must be willing to also identify who should be subject to the new taxes that such proposals require. Unfortunately, the members of the Committee have far more influence over relieving those who are currently paying for Superfund cleanup of their burden than they do over who will pay in their stead.

Improving the Current Liability System

We believe that changes should be aimed at achieving three goals: creating a system where the government is substantially involved in cost allocation, ending the threat that a minor contributor will pay most of the cleanup cost, and creating a reliable system for getting de minimis contributors out of the liability system quickly and easily.

The Government Should Help Allocate Liability

Under the current system, those who are jointly and severally liable share the entire burden of liability allocation. The concept is that the government should focus its resources on remedy selection and cleanup and not on the contentious issue of who owes how much. While this concept has not proven to be particularly onerous in the case of sites with limited numbers of responsible parties, it has become a large burden at large party sites. At large multiple party sites contribution actions are beginning to proliferate resulting in the imposition of legal fees and costs on relatively small parties who end up paying more for lawyers than they owe in cleanup under any

reasonable allocation scenario. This has been exacerbated by EPA's slowness in using its authority to settle out de minimis parties to protect them from contribution harassment. Sierra Club supports the concept of getting the government more involved in the allocation process at multi-party sites. The allocation burden it too heavy to be borne by responsible parties without help. We believe the government should be called upon to use its considerable information gathering powers to help generate data needed to assist in allocating cost. It would also be useful to use a government Administrative Law Judge or some other objective arbiter to make an initial allocation of cost.

The Government Should Not Be Required to Pay Orphan Shares Without New Secure sources of Funding and Limits to Its Outlays

But it is important to note that getting the government involved in allocating cleanup costs and asking the government to share in paying such costs are two different matters. The Sierra Club does not support any allocation scheme that requires the government to pay a specific share of the liability, defined in terms of all or a set portion of the orphan share, unless that obligation is accompanied by realistic new sources of revenue that will clearly provide sufficient funds. We do believe that the Committee should consider ways of encouraging the government to use its authority under Section 122 to voluntarily opt to pay all or a share of orphan liability in order to facilitate settlement, address some gross inequity, or for some other reason deemed to be in the public interest. If the Committee chooses to require the government to pay all or a portion of the orphan share we believe it is essential that the Committee identify where a sufficient amount of additional

revenues will come from to pay for these shares so that a diminution of the current level of cleanup conducted by the government will not occur.

We find that in recent discussions that the term orphan share has many meanings to many people. Indeed, the trend seems to be toward pushing more and more liability into the orphan for any "share" allocable to some party or collection of parties who can not "afford" or otherwise pay their "share". This discussion extends to "shares" that we do not believed are deserved or real, such as the municipal waste generator "share". If the orphan share becomes the convenient residuum of multiple shares that can not be borne by others, I suggest a new terminology. Let's not call it the "orphan" share. Call it the Lion's share because under some liability allocation proposals the orphan share may well be the largest. According to discussions with EPA during the NACEPT meetings, this share could be as high as $420 million per year without adding in "municipal shares" that municipalities are allegedly responsible for. This is a sufficient sum to equal the amount EPA currently uses from the Superfund trust fund for cleanup each year. Under some more expansive definitions of the "orphan share" the cost to the current Fund could be double this figure.

In other words, obligating the government to pay the orphan share with no limit and insufficient new revenue would constitute a massive transfer of funds from the current Superfund trust fund to the bank accounts of responsible parties, crippling EPA's ability to cleanup sites where no responsible parties exist. This is unacceptable.

We Support Use of Non-binding Allocation of Responsibility at Multiparty Sites

There is little question that important progress has been made as a result of the NACEPT process in developing support in the environmental and responsible party communities for an allocation process. Through the use of an ALJ or some other arbiter, evidence is presented and reviewed and "shares" are allocated. We believe that government assistance in this process will help in reducing transaction costs. However, making this process "binding" could have the opposite effect. If an allocation process is binding and has legal effect, then we believe the Constitution requires a judicially oriented process with rights of discovery, cross-examination of witnesses, and administrative appeal. In addition, any administrative decision would also be subject to judicial review. We therefore, conclude that a binding allocation of responsibility process may generate just as much need for layers, just as much conflict among responsible parties, with the only difference being the venue is administrative rather than judicial.

We propose a non-binding process which encourages potentially responsible parties to participate and which would result in a judicially reviewed settlement agreement with the government. Since the allocation is based on greater government involvement in information generation and share allocation it should withstand judicial scrutiny. In appropriate circumstances the government may choose to pay all or a portion of the orphan share to facilitate settlement. The full brunt of the liability system should be brought to bear on those parties who choose to hide or fight the settlement. Those parties should be subject to contribution actions and would be potentially responsible for cost recovery for the orphan share by the

government. The Committee should consider imposing other kinds of penalties on "outlyers." Under our proposal if you don't play, you will pay -- dearly.

It is essential to preserve the current legal authority of the government to order one or more responsible parties to conduct a cleanup under Section 106. The authority derived from this section based upon strict, joint and several liability and constitutes the backbone of an estimated $1.5 billion annually in cleanup. As you may know, there is a sizable section of the responsible party community which supports the concept of PRPs conducting cleanups because they can do it more cheaply than the government. This group acknowledges that retaining Section 106 order authority is necessary to make such a system operate effectively, as long as the party cleaning up gets reimbursed by the others who share responsibility. It is also just as important for the government to retain its authority to seek reimbursement under Section 107. This becomes an even more important tool in the context of the government seeking reimbursement from those who are hiding or fighting an allocation for all or a portion of the orphan share it has agreed to pay. We hope however, that the proposal we describe does not result in the government being asked to become a collection agent for recalcitrant parties.

Early Settlement of Liability for Small Contributors

There seems to be an emerging consensus that settling with de minimis parties and de micromis parties can make an important contribution toward reducing transaction costs and unfairness of dragging minor contributors in to the Superfund liability allocation system. According to the 1992 Rand report, the more parties at a site, the more likely transaction costs are likely to be.

Undoubtedly, the costs of legal representation for small contributors bear a disproportionately large percentage to their ultimately liability and, all too often, can exceed it. We support providing de minimis settlements for all parties for which reasonable evidence shows that they contributed 1 percent or less of the hazardous substances to the site. This settlement should require an appropriate early out bonus fee to guard against the problem that the liability releases for small contributors are often being made when information is limited regarding who contributed what to the site and what the ultimate cleanup will cost. We also support the concept of penalizing other responsible parties who falsely identify some one as a small contributor. At a minimum, any transaction costs suffered by the falsely accused contributor should be paid by the accuser.

Finally, we support the concept of statutorily exempting from liability so-called de micromis parties. Those who contributed .05 percent or less of the hazardous substances to the site should not be brought into the liability system at all.

Cap the Liability of Municipal Waste Generators

The Sierra Club approaches the discussion of municipal waste generation from the point of view that Congress never intended that those generating municipal waste should be included in the group of liable parties who would pay for cleanup. The critical dilemma is that if it were not for the hazardous substances disposed of by commercial generators at the site, the odds are it would never have been listed as a National Priority List site (though there are exceptions to this rule). However, if it were not for the presence of

large volumes of municipal waste the site would likely be easier and cheaper to cleanup (there are exceptions to this rule, too). The Sierra Club and other major environmental organizations have endorsed a proposal introduced by Senator Lautenberg that would resolve this dilemma by capping municipal waste generator at 4 percent. This is a figure arrived at by EPA through calculating the average difference between treating municipal waste compared to hazardous waste. There are many other ways of calculating the "cost" of municipal waste. If municipal waste generators were treated the same as we recommend for de minimis contributors such that a calculation were made of the contribution of the portion of their waste that was a hazardous substance, many municipal waste generators might well qualify as de minimis. However, this calculation is difficult and may involve a significant degree of speculation.

Opposition to the Lautenberg bill has focused on the fact that the presence of municipal waste at some sites drives up cleanup costs well above four percent of the total cost. Other responsible parties at co-disposal sites are claiming that a cap forces them to pay the "municipal generator share" to the extent it "exceeds" four percent. Some have proposed adding this share to the "orphan share" the government should be required to pay. We do not believe the law does or should relieve responsible parties of their cleanup obligations because of unfortunate variables at the site which make such cleanup more costly. The argument regarding municipal waste is analogous to allocating a "share" to the orphan share because the disposal site is located in sandy soil which more easily transfers toxics to underlying groundwater, or because it is located over a high water table. The circumstances at NPL sites vary dramatically across the nation. Some circumstances are more burdensome than

others. The presence or absence of municipal waste is one of those variables. We do not believe it should be used to transfer large portions of the cleanup costs to municipal waste generators.

Those who are serious about reducing transaction costs must come forward with a municipal waste generator cap. If they believe the Lautenberg cap is too low. They should provide a basis for a higher one. Sierra Club will oppose transferring so-called municipal generator shares to the orphan for the government to pay without enactment of new taxes to pay for these "shares."

Increase the Use of Ability to Pay Criteria and Structured Settlements

The government already considers the ability of responsible parties to pay a portion of the cleanup liability in its current enforcement decisions. This issue has achieved higher visibility thanks to the provisions in the Lautenberg bill providing greater structure to the ability to pay analysis as it applies to municipal owners and operators of sites. We believe that the Committee should examine whether providing greater assurance that these criteria are appropriately applied to all PRPs. The Committee should also consider ways of assuring the government gives full consideration to so-called structured settlements that enable PRPs to pay over time through the purchase of annuities or other appropriate long-term financing mechanisms. We believe these considerations will contribute to easing the burden on smaller PRPs who have limited financial flexibility.

We Need A System to Provide Long-Term Monitoring, Maintenance, and Repair of "Contained" Sites

Amid all the discussion over revamping the Superfund liability system, too little attention has been focused on the question, "liability for what?". Most of the attention has been drawn to initial capital costs of implementing a cleanup. A great deal of pressure is being placed on Congress to modify initial remedies to reduce emphasis on permanence and treatment in order to reduce initial capital costs. The inevitable result will be to leave more sites in containment mode. We do not have enough experience with enough completed sites to be at all confident that the measures included in most settlement agreements, such as maintenance trust funds, will actually provide adequate funding to pay for their intended uses. Although states are in general liable for long-term maintenance after ten years of groundwater treatment at orphan sites, who makes sure they in fact carry out needed monitoring and maintenance. These are all issues that cut to the heart of the "ticking time bomb" anxiety of nearby communities. Responsible parties can not expect a both reduction in the permanence and effectiveness of remedies and "finality" to the resolution of their liability.

While we do not have a specific proposal to bring before the Committee today, we urge the Committee to include this issue in its on-going investigation of changes to the liability system under Superfund. Should the Committee seriously consider proposals for new trust funds or expanded versions of the current Superfund trust fund, then we believe the a top priority the creation of a new trust fund devoted to financing long-term monitoring and maintenance of containment sites. These funds could be used to finance community over-

sight committees comprised of state and local officials, PRPs and interested members of the local community.

The Sierra Club Opposes Exempting Prospective Purchasers From Liability

During discussions of the impact of Superfund on redevelopment, proposals have emerged to exempt so-called prospective purchasers from liability. We regard such proposals as creating potentially a huge loophole enabling current owners to shirk cleanup responsibilities by selling to new "dummy" holding companies who could potentially destroy important evidence bearing upon cleanup needs and liability with impunity. It is simply not acceptable to create new legal gimmicks which enable contaminated properties to be developed with the risk that exposure of unsuspecting members of the public is increased. These proposals seem to be predicated on the assumption that we can develop contaminated properties first and address protecting the public afterwards. This assumption is profoundly wrong.

I would like to conclude my testimony by addressing two additional issues which are greatly affected by the discussion of Superfund liability but which are not part of liability per se, but along with cleanup standards and remedy selection, deserve much more attention by Congress than they have been given thus far. I am referring to environmental justice and public participation.

I am aware that Dr. Benjamin Chavis, Executive Director of the NAACP has written members of the Environment and Public Works Committee proposing an Eight-Point Superfund Reform Plan. The Sierra Club strongly supports many of the goals in this plan. Dr. Chavis discusses the need to focus on long-term

as well as short term public health threats, to consider other health threats to which communities are being exposed in setting cleanup goals, to assure communities under the greatest environmental assault get high priority response, and most importantly to assure citizen involvement at all stages of decision-making and community empowerment. We believe many of these goals could be and should be included in the Superfund program. Further, we believe they can be achieved without making major changes to the current liability and funding mechanisms in the law other than those I have recommended today. We commend Dr. Chavis for raising the visibility of these issues. We look forward to discussing with the Committee in detail how we can best include his goals in the Superfund program.

STATEMENT OF

ROBERT ABRAMS

ATTORNEY GENERAL

STATE OF NEW YORK

BEFORE THE

SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE

SUBCOMMITTEE ON SUPERFUND, RECYCLING

AND SOLID WASTE MANAGEMENT

NOVEMBER 4, 1993

**STATEMENT OF ROBERT ABRAMS
ATTORNEY GENERAL OF THE STATE OF NEW YORK
SUBCOMMITTEE ON SUPERFUND, RECYCLING AND SOLID WASTE MANAGEMENT, CONCERNING THE IMPORTANCE TO STATES OF RETAINING CERCLA'S STRICT, JOINT AND SEVERAL LIABILITY STANDARD.**

Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to testify today about the critical importance to the states of retaining CERCLA's strict, joint and several liability standard. The ability of states to secure responsible party clean up of thousands of contaminated sites would be seriously undermined if Congress were to change CERCLA's liability standard. Retention of the standard is central to maintaining and enhancing the federal/state relationship and to protecting broader public interests in public health and a clean environment.

BACKGROUND

When I first assumed the office of Attorney General nearly 15 years ago, in January 1979, the Love Canal disaster had just been declared a public health emergency by New York State. The graphic horrors of Love Canal -- extremely toxic chemicals leaking into basements and surfacing on a schoolyard -- sparked the discovery of a horde of other toxic waste dumps across the country. Over 1,300 suspected sites have since been identified in New York State alone. Government at all levels was rudely awakened and forced to confront face-to-face the seemingly insurmountable legacy of public health and environmental threats posed by toxic waste dumps littering myriad communities. The massive proportions of this new-found threat

to the environment and the urgent health concerns of people in affected communities mobilized concerted action to begin to address these sites.

State attorneys general like myself are charged with protecting the broad legal interests of the states and their people. We were suddenly compelled to dust-off and creatively apply ancient common law principles to remedy massive, modern-day legal and technical dilemmas created by decades of indiscriminate disposal of the toxic by-products of our industrial age. Previous disposal methods had only deferred and enlarged the price tag for remediation. Fortunately, New York courts and those in several other states began to impose time-tested common law principles, such as public nuisance, with its strict, joint and several liability standard, upon a range of persons responsible for creating the hazardous waste dumps in the first place. Nevertheless, arduous, case-by-case application of 50-state common law and piece-meal state statutes would, absent Congressional help, have undoubtedly created even more legal liability battles than we have seen. Fortunately, CERCLA provided a national law which helped clarify the "polluter pays" standard, though even that was not easy.

Congress' passage of CERCLA in 1980 was a timely and essential aid to the states in many ways. Much of the public focus has centered on EPA's use of the Superfund to pay for remediation and on federal enforcement activities at EPA's National Priority List sites. However, CERCLA is much more. The very heart of CERCLA is its strict standard of liability. In most cases, liability is also joint and several, unless harm at a particular site is divisible. In New York and elsewhere, state law has evolved consistent with federal law as to strict liability standards. States must necessarily continue to rely on those state laws to clean up thousands of state sites, even if Congress changed CERCLA.

At the same time, New York and many other states continue to rely also upon the clarity of CERCLA's liability standard and the availability of federal CERCLA claims to supplement state claims and recover remedial costs from responsible parties under § 107.[1] Return to a system of state common law and state statutory enforcement alone, without a strong CERCLA, would surely create more litigation, complicate it, and jeopardize successful outcomes. The states need to continue to rely both on their own laws and on a strong CERCLA.

Simply put, CERCLA's strict, joint and several liability standard is helping to assure clean-up of thousands of hazardous sites nationwide, well beyond the limited scope of the NPL. CERCLA has been a powerful incentive for industry to prevent pollution by hazardous substances, as well.

STATE RELIANCE ON CERCLA'S STRICT, JOINT AND SEVERAL LIABILITY STANDARD

If Congress now, well over a decade later, were to impair or replace CERCLA's strict, joint and several liability scheme, it would tear asunder much of the fabric of the state-federal partnership in environmental and public health protection. The entities now urging profound legislative changes in order to subvert the "polluter pays" principle have not dealt head-on with key state aspects of the issue. The "public works" or "fair share" alternatives they propose would eviscerate CERCLA's liability scheme and fall irresponsibly short of reasonable clean-up goals, especially when

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[1]See, State of New York v. Shore Realty, 759 F.2d 1032 (2nd Cir. 1985) and USA and State of New York v. Occidental Chemical Corporation (Love Canal), 722 F.Supp. 960 (W.D.N.Y. 1989), which demonstrate the interdependent roles of state law and CERCLA in providing adequate legal remedies for hazardous substance releases in New York.

critical damage to state remedial and enforcement programs is factored in. Public health, safety and environmental restoration goals would be seriously threatened if Congress abandons the centuries of common law legal principles of liability embodied in CERCLA. If CERCLA is a less than perfect tool that sometimes seems inequitable in specific cases, certainly it is more fair and far more likely to advance its sound public policy goals than are the alternatives advanced today by the Chemical Manufacturers Association and Insurance Industry.

While CERCLA essentially built upon a firm common law foundation in its principles of liability, its enactment performed a valuable clarifying function, thereby reducing the transaction costs and extent of litigation that would have undoubtedly occurred had the federal government and the several states been left to case-by-case litigation under previous law. Most states now have in place enforcement and remedial programs geared to the federal Superfund program, including similar strict liability provisions for clean up costs. Congress must recognize the devastating impacts on essential state programs before considering dismantling CERCLA. Furthermore, Congress must firmly reject the extreme proposed by some who would also strip the states of their own remedies through preemption. The states must always remain free to exercise their own powers to protect public health and the environment.

No one argues that CERCLA has been perfectly administered or that it may not benefit from significant EPA program management changes and further judicial refinement. Some modest legislative adjustments may also be desirable, but should be considered only after a careful analysis of EPA's recent and forthcoming proposals to streamline and more fully implement CERCLA's existing provisions. Ongoing and careful Congressional oversight can insure that EPA is now serious about developing

and implementing administrative improvements, such as those being discussed by a broad range of stakeholders in the "NACEPT" process (National Advisory Council for Environmental Policy and Technology). CERCLA can be markedly improved without destroying a liability scheme essential to the 50 states as well as to the federal government.

The National Association of Attorneys General (NAAG) is, as you know, made up of those of us in the front lines of litigation to protect the public health, safety and the environment and the fiscal interests of the fifty states. NAAG has adopted a resolution firmly supporting retention of CERCLA's central strict, joint and several liability standard. I am here today on NAAG's behalf, as well as my own. I would add that the National Governor's Association (NGA) and the Association of State and Territorial Solid Waste Management Officials (ASTSWMO) have similarly passed firm resolutions in favor of retaining CERCLA's vital standard. Strict, joint and several liability is essential in many ways to enable the states to continue their own progress in cleaning up the many sites which are not currently eligible for federal action.

First, National Priority List sites make up a relatively small portion of the total sites requiring remediation -- albeit some of the most serious ones -- amounting to 82 sites out of 760 currently scheduled for remediation in New York, for example. Last July, New York State Environmental Conservation Commissioner Thomas Jorling testified to this subcommittee about the federal/state relationship in the Superfund program, and described to you in some detail the significant commitment of resources and accomplishments of New York State's hazardous waste remedial program, which is anchored by a $1.2 billion dollar environmental bonding capacity enacted in 1986. My own office has also pursued dozens of legal actions and secured court orders -- many

on consent -- committing responsible parties to carry out several hundred million dollars worth of remedial actions. The State Department of Environmental Conservation routinely obtains partial and final administrative consent orders also, totalling hundreds of millions of dollars from private parties at scores of sites. Many other states have made similar commitments of resources and enjoyed similar successes. Private parties would not have been as willing to settle up without strict liability. Surely, future transaction costs to litigate cases like this could be astronomical if the scope of a whole new liability scheme must next be defined in the courts.

Now, hard-won court decisions upholding CERCLA's strict, joint and several liability standard have helped persuade a large number of private parties to accept their clean-up obligations without resort to litigation at all. The Department of Environmental Conservation's analysis shows that approximately 65% of the sites identified as needing clean up in New York are being addressed by the responsible parties, and some EPA estimates put the figure at 70% for NPL sites. Hard years of litigation and clarification of the laws have resolved many of the issues that raised transaction costs as they were litigated for the first time. It is difficult to see how the proposed alternatives to CERCLA would promote further successful resolutions of this sort, nor how they would promote fairer or faster remediation at the vast majority of toxic sites both on and off the NPL. Instead, uncertainty and confusion would ensue as courts and the 50 states sort out the details of proposed radical legislative changes, such as the "fair share" proposal. Potentially responsible parties would again hesitate to accept their obligations expeditiously, as many are now doing. Radical changes

could also unfairly penalize the large number of responsible parties who have settled to date, and reward recalcitrant and grudging hold-outs.

It would also be unfair and unwise to unravel CERCLA's strict liability in favor of a fund that may address only some (or even all) of the country's NPL sites, but not the thousands of other toxic sites. Even if large tax increases and other funding sources could be cobbled together, pass the scrutiny of a skeptical public sure to foot the bill via pass-through costs, and be large enough to fully address NPL sites, what about the thousands of additional state sites in need of remediation? The states have shown sterling initiative in struggling to address these challenges. Radical changes by Congress would cut the legs out from under these diligent state efforts. It would take creation of an impossibly enormous fund to replace the value of anticipated private party cleanups at state sites.

Congress should instead take this opportunity to strengthen the role of states in the Superfund remedial process, rather than eviscerate the essential strict, joint and several liability standard. The many states, like New York, which are ready, willing and able to carry a heavier load even at NPL sites should be encouraged through, for example, much more extensive delegation to states of EPA's Superfund program. This has also been strongly requested in NAAG's resolution and in the testimony presented last July by Commissioner Jorling. That aspect of CERCLA is not the central subject today, but I ask you to consider unequivocally extending to delegated states authority to obtain injunctive relief in court, issue administrative orders, and obtain treble damages for non-compliance under § 106 of CERCLA. This strong tool would appropriately round out the cost-recovery relief already available to the states under section 107. This kind of enhanced state role would also speed up the remediation

process at many sites, reduce the transaction costs inherent in dealing with two levels of government, and lessen some of the dissatisfaction with the current system.

POTENTIAL REFINEMENTS SHOULD BE MADE TO CERCLA'S PROCEDURES, NOT ITS CORE LIABILITY SCHEME

If, after reviewing EPA's forthcoming plans to streamline CERCLA administration, Congress decides to make legislative changes, modifications to certain procedures should be considered long before changes to the liability scheme. Many such changes hold potential promise, such as: expanding state-lead responsibility and program delegation, expediting and standardizing remedy selection processes, fully implementing the potential for so-called de minimis and de micromis parties to settle early and avoid transaction costs, and several proposals to address the peculiar problems of former municipal sites.

It is our hope that much will be accomplished through program changes actively being seriously considered by Administrative Workgroups at EPA. When considering what Congressional action is needed, it is also important to take into account judicial refinements of the law. The early round of judicial decisions upheld the strict liability standard and the availability of joint and several liability in appropriate cases. Recent cases are defining its reach and allowing traditional defenses that should diminish perceptions of inequity.[2] Where there are either distinct harms at a single site or even where a single harm may be reasonably apportioned, the courts have recently clarified

[2]See, EPA v. Sequa Corporation (In re Bell Petroleum Services), U.S.C.A., 5th Cir., September 28, 1993; U.S. v. Alcan Aluminum Corp., 964 F.2d 752 (3rd Cir. 1992) (Alcan I); and U.S. v. Alcan Aluminum Corp., 990 F.2d 711 (2d Cir. 1993) (Alcan II).

that joint and several liability does not automatically apply under all factual circumstances.

Congress has also been urged by many entities, including NAAG, to consider alternative approaches to liability of municipalities and approaches to remediation of the unique problems posed by municipal solid waste landfills which contain hazardous substances. Such landfills comprise some of the most difficult multi-party sites where transaction costs have been the highest because of the difficulty in allocating liability among municipalities, industrial and commercial contributors of wastes, and individual contributors of non-industrial wastes with some hazardous constituents. A hard look is being taken at whether new EPA procedures will be sufficient, or whether Congress should act to deal differently with these sites. The entire liability scheme does not need changing to address this issue.

Further thought should also be given to encouraging earlier and broader "de minimis" and so-called "de micromis" treatment and contribution protection of certain parties in appropriate cases. Under SARA § 122(g), EPA may now "whenever practicable and in the public interest" and "as promptly as possible" reach a final settlement with de minimis parties. This existing provision could be much more aggressively implemented by EPA earlier in the process, and we believe that EPA may be considering administrative changes to make that happen.

Finally, complicated, multi-party site cleanups and liability allocation will always be difficult, but some of the industrial and insurance interests heard from earlier today can themselves reduce their own transaction costs, particularly in third-party situations. The Ludlow site in New York, for example, combined state enforcement targeting of the site owner together with early involvement of the two major third-party industrial

contributors to obtain prompt site clean-up at this NPL site. Later, strict judicial oversight by Judge McAvoy combined with disciplined lawyering by defendant and third-party lawyers, combined to secure prompt settlement of 250 fourth-party claims. Only a few parties chose to incur transaction costs and litigate. The site was promptly remediated without public expense at reasonable transaction costs for most of the parties.

If EPA or Congress decide to facilitate allocation of remedial costs, any changes should be limited to the third-party allocation phase, retaining strict, joint and several liability as the standard. Congress need not substitute a proportional liability scheme to help jointly and severally responsible parties reach quicker resolution among themselves of who-should-pay-how-much. The current standard is particularly crucial at state sites, where Superfund monies are not available to make up any shortfall. A weaker standard will only thwart or delay cleanups, and is more likely to exacerbate than relieve transaction costs at most of the sites in this country, placing an unreasonable burden on state remedial and enforcement efforts.

CONCLUSION

It is unnecessary to change CERCLA's core liability scheme. CERCLA's strict, joint and several liability standards are essential not only to the federal program, but to a much broader range of state efforts to remedy toxic dumpsites.

Thank you.

NATIONAL ASSOCIATION OF ATTORNEYS GENERAL

Adopted

Summer Meeting
July 7-10, 1993
Chicago, Illinois

RESOLUTION

CERCLA

WHEREAS, the Superfund Program implemented under the federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and under comparable state laws is of critical importance to assure protection of public health and the environment from uncontrolled releases of hazardous substances at thousands of sites throughout the country;

WHEREAS, the Attorneys General of the states have significant responsibilities in the enforcement of state Superfund programs including actions to compel those responsible for environmental contamination to take necessary cleanup actions and to reimburse the states for publicly-funded cleanup actions:

Liability

WHEREAS, the effective enforcement of the Superfund cleanup program and the ability to impose cleanup costs on those who are responsible for contamination depends upon the strict, joint and several liability standards established in CERCLA and similar liability standards under state statutes and judicial decisions in 36 states;

WHEREAS, the current liability provisions of CERCLA and the state counterparts serve the additional public purposes of promoting waste minimization at the source, improved management of toxic and hazardous wastes that continue to be produced, and voluntary cleanup of property incident to its sale, financing or redevelopment;

WHEREAS, transaction costs associated with application of the CERCLA liability standards can be substantially reduced by amendments to modify the application of the liability scheme at sites involving a large number of parties, particularly where many of the parties were de minimus contributors or where a significant orphan liability share exists;

Preemption

WHEREAS, CERCLA is appropriately regarded as an additional tool for regulatory agencies to utilize in effecting cleanup of contaminated sites, and not as a replacement of otherwise existing environmental law;

WHEREAS, the goal of CERCLA is to clean up as many sites as possible as thoroughly as possible and as expeditiously as possible, and this goal can best be achieved by allowing States to exercise fully all existing environmental authorities;

WHEREAS, a significant number of the most dangerous hazardous waste disposal sites in the United States are located at federal facilities;

WHEREAS, Congress has waived federal sovereign immunity under CERCLA with regard to state laws concerning removal and remedial action, including state laws regarding enforcement at federal facilities which are not included on the National Priorities List;

WHEREAS, notwithstanding this waiver of federal sovereign immunity, federal agencies refuse to acknowledge state regulatory authority over their facilities;

WHEREAS, federal agencies should be subject to the same sanctions as private industry, and state and local governments, who become responsible parties under CERCLA;

State Regulatory and Police Power Actions

WHEREAS, states are frequently subject to counterclaims under CERCLA solely based on the environmental regulatory activities at CERCLA sites;

WHEREAS, although states routinely prevail in having these counterclaims dismissed, the absence of clear language in CERCLA precluding such claims against states frequently prolongs and increases the expense of cost recovery actions;

Program Delegation

WHEREAS, the CERCLA program fails to effectively use state resources to achieve prompt cleanup of environmental contamination;

WHEREAS, the number of contaminated sites currently identified nationwide far exceeds the capacity of EPA to address on its own;

WHEREAS, many states now have proven track records in implementing effective cleanup programs;

Operation and Maintenance Costs

WHEREAS, EPA has interpreted CERCLA to require the states to shoulder the burden of all operation and maintenance costs for CERCLA cleanups; and

WHEREAS, such a policy not only imposes an unreasonable burden on the States, but also provides an inappropriate incentive for the federal government to select lower capital cost remedies that are not permanent.

NOW, THEREFORE, BE IT RESOLVED THAT THE NATIONAL ASSOCIATION OF ATTORNEYS GENERAL urges Congress to:

- retain the basic strict, joint and several liability standards now in force under CERCLA for clean up of most of the nation's uncontrolled hazardous waste sites;
- consider an alternative approach for managing the cleanup of municipal solid waste landfills if adequate funding is provided for the alternative approach;
- consider means of reducing transaction costs at other sites involving numerous responsible parties such as developing a more effective process for settling with de minimus contributors and making available more government funding as part of settlements involving sites with a significant orphan share of liability;
- amend CERCLA to reconfirm Congressional intent not to preempt the operation of State law at CERCLA sites;
- clarify that federal sovereign immunity under CERCLA is waived at federal facilities, whether or not the site is listed on the National Priorities List;
- amend CERCLA to clarify that states are not liable for any cleanup costs under CERCLA solely as a result of environmental regulatory activities with respect to CERCLA sites;
- amend CERCLA to provide for delegation of the federal Superfund program to states to operate in lieu of the federal program, based upon EPA's determination that state cleanup programs meet minimum standards or objectives, including implementation or enforcement of cleanups that adequately protect human health and the environment;
- amend CERCLA to require the president to allow states to select remedies at CERCLA sites where such states have entered into a cooperative agreement and have demonstrated, in accordance with objective criteria, their capability to exercise such functions; and
- amend CERCLA to clarify that the fund will be available to cover 90% of the cost of remediation, including long-term operation and maintenance costs.

BE IT FURTHER RESOLVED that the Environmental Legislative Subcommittee of the Environment and Energy Committee, in consultation with NAAG's officers, is authorized to develop specific positions related to the reauthorization of CERCLA consistent with this resolution, and to represent NAAG's position before Congress and to federal agencies involved in reauthorization discussions.

BE IT FURTHER RESOLVED that NAAG directs its Executive Director and General Counsel to send this resolution to the appropriate Congressional Committees, to the Administrator of the U.S. Environmental Protection Agency, and to the Attorney General of the United States.

Abstain: Attorney General Don Stenberg

United States General Accounting Office

GAO

Testimony

Before the Subcommittee on Superfund, Recycling, and Solid Waste Management,
Committee on Environment And Public Works,
United States Senate

For Release
on Delivery
Expected at
10:00 a.m. EST
Thursday
November 4, 1993

SUPERFUND

Techniques to Reduce Legal Expenses Have Not Been Used Often

Statement of Keith O. Fultz
Director of Planning and Reporting
Resources, Community, and Economic Development Division

GAO/T-RCED-94-44

Mr. Chairman and Members of the Subcommittee:

We appreciate the opportunity to discuss possible ways to reduce the costs of resolving liability for cleaning up hazardous waste sites in the Environmental Protection Agency's (EPA) Superfund program. Parties responsible for cleaning up these sites have complained that these costs, which are sometimes called transaction costs, are excessive. At the request of this Subcommittee and other Committees and Members of Congress, we have reviewed and testified on EPA's use of the tools authorized by the Superfund laws for reducing transaction costs.[1]

These tools include (1) de minimis settlements--expedited settlements for parties that have contributed comparatively small amounts of low-toxicity waste; (2) nonbinding allocations of responsibility (NBAR) for cleanup costs by EPA to responsible parties; (3) mixed-funding agreements between EPA and responsible parties to share cleanup costs; and (4) alternative dispute resolution (ADR)-- the use of neutral third parties to help resolve liability and cost allocation problems. (See app. I for a description of these tools.)

[1]Superfund: Little Use Made of Techniques to Reduce Legal Expenses (GAO/T-RCED-93-60, June 30, 1993) and Superfund: EPA Could Do More to Reduce Responsible Parties' Legal Expenses (GAO/T-RCED-93-73, Sept. 28, 1993).

In summary we found that:

-- EPA has made little use of the settlement tools overall. Out of 1,074 nonfederal sites,[2] as of September 1993, EPA had completed de minimis settlements at only 73 sites, prepared NBARs at 5 sites, used mixed-funding arrangements at 16 sites, and employed alternative dispute resolution techniques at 35 sites.

-- The tools have not been used much, primarily because EPA has not made a sustained effort to encourage its regional offices to use them. EPA has mainly been concerned with getting as many responsible-party-financed cleanups under way as quickly as possible and has viewed the settlement tools as drawing enforcement resources away from this effort. In addition, according to most regional officials we interviewed, EPA's use of the settlement tools has been limited by restrictive administrative procedures that made the tools difficult to implement.

-- Recently, following widespread complaints about high transaction costs, EPA began to give the settlement tools higher priority. However, EPA's effort at this point is

[2]As of September 1993, 123 of the 1,197 final sites on the National Priorities List (EPA's inventory of Superfund sites) were federal sites, and 1,074 were nonfederal sites. The tools for controlling transaction costs are designed primarily for use at nonfederal sites.

not fully operational but mostly involves pilot projects at selected regions. As we will discuss, further action is needed to make efforts to reduce transaction costs an integral part of the agency's operations.

-- While we generally support efforts to lower transaction costs through more effective use of the settlement tools, we caution that expanded use of one of these tools--mixed funding--could be expensive for the government and could complicate, rather than simplify, settlement negotiations.

-- Mr. Chairman, you also asked us for our comments on proposals to eliminate retroactive liability in the Superfund program, proposals that would, in effect, turn the Superfund program largely into a "public works" program. We will give our comments on this subject at the end of this statement.

BACKGROUND

Before discussing these issues in greater detail, I would like to briefly provide some background on the transaction cost problem.

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) authorizes EPA to compel parties

responsible for Superfund sites to clean them up or to reimburse EPA for its cleanup costs. Courts have interpreted responsible party liability under Superfund to be strict, joint and several, and retroactive. Under strict liability, a party may be liable for cleanup even though its actions were not considered negligent when it disposed of the wastes. Because liability is joint and several, when the harm done is indivisible, one party can be held responsible for the full cost of the remedy even though that party may have disposed of only a portion of the hazardous substances at the site. Retroactive liability means that liability applies to actions that took place before CERCLA was passed.

EPA has had considerable success in recent years in enforcing the cleanup responsibilities of potentially responsible parties (PRP) under this system of liability. For example, PRPs undertook 72 percent of the new cleanups started in fiscal year 1992. The liability standards may also promote careful handling of hazardous wastes and encourage voluntary restoration of contaminated property. At the same time, allocating responsibility for cleanup costs under the joint and several liability standard can be difficult and expensive. Data on wastes disposed of years ago by the parties may be limited; disputes can arise about how the relative toxicity of wastes should affect responsibility for cleanup; and liability for wastes deposited by unknown contributors may have to be apportioned among known contributors. Negotiations take place both between EPA and the PRPs and among the PRPs. EPA

encourages PRPs to organize committees at each site to address allocation issues. Individual PRPs and PRP committees hire counsel to represent them and technical consultants to support their negotiation or litigation positions. The costs associated with negotiation and litigation are sometimes referred to as transaction costs.

Transaction costs at some sites are compounded by lawsuits brought by PRPs against other parties that the PRPs believe contributed to the contamination and should help to pay for the cleanup. These contribution suits can involve hundreds and, in some instances, over a thousand parties.[3] At some sites, defendants in contribution suits have included contributors of minuscule amounts of wastes--such as fast food restaurants, a Little League, and even a local Elks Club--that EPA as a matter of policy does not normally pursue for cleanup costs. The agency refers to these small contributors as de micromis parties.

Another tier of transaction costs--outside of the scope of our review and not directly addressed by the Superfund settlement tools--derives from disputes between PRPs and their insurers. As PRPs are notified of their potential liabilities, many seek coverage under their insurance policies. Insurers may refuse to pay these claims, and complicated litigation may follow.

[3]See app. II for a discussion of possible techniques for discouraging contribution suits by encouraging parties to settle with EPA.

To help parties reach settlements with EPA and with each other, the Superfund Amendments and Reauthorization Act of 1986 (SARA) gave EPA the authority to use tools to reduce transaction costs, including de minimis settlements, NBARs, mixed funding, and ADR.

SETTLEMENT TOOLS HAVE
BEEN USED INFREQUENTLY

Although almost 7 years have passed since SARA authorized settlement tools, EPA has used them at relatively few sites. Out of 1,074 Superfund nonfederal sites, as of September 1993, EPA had entered into de minimis settlements at only 73 sites, prepared NBARs at 5 sites, completed mixed-funding arrangements at 16 sites, and used ADR at 35 sites. Moreover, use of the tools tends to be concentrated in a few of EPA's 10 regional offices. (See table 1.) Two regions account for almost half of sites where the de minimis settlements have been used; seven regions have never issued an NBAR; two regions have done most of the ADR.

Table 1: Total Number of Sites Where Settlement Tools Were Used, by Region (as of September 1993)

Region	Total number of NPL sites per region[a]	Number of sites where tools were used			
		De minimis	NBARS	Mixed funding	ADR
I	77	14	3	2	10
II	188	7	0	2	2
III	143	4	0	4	1
IV	141	8	0	1	1
V	248	21	0	2	13
VI	63	6	0	2	0
VII	54	2	0	2	1
VIII	34	3	0	0	1
IX	78	2	1	0	3
X	48	6	1	1	2
Total	1,074	73	5	16	34[b]

[a]The number of sites is shown to provide some perspective on how frequently the tools have been used; however, not every site is a candidate for the use of every tool. The numbers exclude federally owned sites.

[b]EPA headquarters used ADR at one additional site.

Of the tools, de minimis settlements have been used the most often. EPA has reached 125 de minimis settlements at 73 Superfund sites. Fifty-eight percent of the settlements occurred in fiscal

years 1992 and 1993, when the agency made a special effort to increase its rate of de minimis settlements. A study prepared for the U.S. Administrative Conference found that de minimis settlements have been "greatly" underutilized. This study estimated that these settlements have been used at only 20 percent of the sites likely to benefit from them. Although EPA disagrees with some of the study's assumptions and it is clear that de minimis settlements are not appropriate for every site, EPA officials concur with the overall theme of the study--that EPA should enter into more de minimis settlements.

EPA's experience with de minimis settlements indicates that they are potentially powerful techniques for resolving the liability and reducing the transaction costs of large numbers of parties. The 125 settlements involve agreements with over 5,200 parties. In Region IX, one de minimis settlement in the pipeline has about 3,200 eligible de minimis parties.

The Congress intended that EPA offer de minimis settlements to parties with small liability shares as early as possible in the cleanup process. This has not generally happened. According to the Administrative Conference report, the de minimis settlement at most sites did not occur until EPA had formally estimated the cleanup costs and resolved the liability of the major parties. Much of the potential of the de minimis tool for reducing

transaction costs can be lost when small contributors are not removed from the settlement process early.

Use of NBARs and mixed funding has been very limited. EPA has prepared NBARs at five sites, one of which was part of a special pilot project. EPA has completed 16 mixed-funding agreements, including 12 preauthorized agreements and 4 mixed-work arrangements. However, two EPA enforcement practices have partially taken the place of NBARs and mixed funding. First, in about 172 instances, EPA has supplied PRPs with waste-in lists--lists showing EPA's data on the volume and type of wastes contributed by PRPs to a site. These lists can help PRPs resolve allocation issues but are not full substitutes for NBARs because they do not provide the government's opinion on cost allocation. In addition, EPA contributes to site cleanup costs, in effect providing mixed funding, whenever it settles with PRPs for less than full cleanup costs. Although the agency does not keep summary data on these compromises, regional officials told us that they occur in virtually every Superfund settlement.

EPA has used ADR in Superfund cases at 35 sites. Most of the ADR has been concentrated in two regions that have been receptive to the use of this tool. (See app. III for case studies on the settlement tools).

SEVERAL FACTORS ACCOUNT FOR THE LIMITED USE OF THE SETTLEMENT TOOLS

Why have the statutorily authorized settlement tools been used at so few sites? Although the reasons differ to some extent for each of the tools, there seems to be an overriding explanation: EPA has not managed the Superfund program to promote their use. For example, EPA has not fully surveyed sites to determine which might be candidates for the use of these tools or actively informed PRPs of their availability in all cases. It has not determined what resources the regions need to implement the settlement tools or how to reconcile goals for achieving large numbers of settlements with concern for responsible parties' transaction costs.

In addition, regional officials we interviewed thought that administrative requirements for using some of the settlement techniques unnecessarily limited the cases in which they could be applied.

EPA's limited use of the settlement tools is a chronic problem. In its 1989 management review, EPA identified a number of obstacles to wider use of the tools, including the belief, held by some agency officials, that the tools were inconsistent with the Superfund liability doctrine, that they were expensive to use, or that they diverted EPA resources from efforts to achieve cleanups.

The report stated that EPA may lack the control needed to ensure that regional decisions are consistent with national policy direction. The report recommended that EPA provide training for regional personnel, develop an incentive system for the regions to use these tools, and establish specific goals for regional use of the tools. These recommendations were never fully implemented.

In 1988 testimony before the House Energy and Commerce Committee's Subcommittee on Oversight and Investigations,[4] we indicated that EPA had not given high priority to de minimis settlements, had limited staff available for this function, and had not established goals for these settlements. In a 1989 report,[5] we discussed our survey of EPA regional staff to determine why de minimis and other settlement tools were not being used. Limited staff and funds and low priority were some of the reasons most often cited by regional project managers and attorneys for not using de minimis settlements as frequently as possible. Regional project managers and attorneys also cited limited staff training and experience.

In the past year, as controversy over Superfund transaction costs has grown, EPA has given greater emphasis to the use of the statutory settlement tools. The most significant achievement from

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[4]Superfund De Minimis Settlements (GAO/RCED T-88-46, June 20, 1988).

[5]Superfund: A More Vigorous and Better Managed Enforcement Program Is Needed (GAO/RCED-90-22, Dec. 14, 1989).

this effort so far has been an increase in the use of de minimis settlements and ADR techniques. Pilot studies were also begun to assess the potential for greater use of NBARs. However, the agency is still a long way from using the tools routinely.

EPA needs to sustain its current interest in the tools and address significant impediments that remain to its use of them. While improving and expanding the use of each tool depend on changes unique to that tool, EPA could nevertheless take some overall management actions to foster an agency culture that values the use of the tools. EPA could do more to publicize their availability, determine the maximum practical extent of their use, assess the resources that the regions need to use them, target resources specifically for their use, share success stories across regions, and provide incentives and accountability for their sustained use.

De Minimis Settlements

EPA's experience with the de minimis settlement tool illustrates the impediments that have restricted the use of the SARA tools.

EPA officials told us that the cost to the regions of de minimis settlements represents a major impediment to completing such settlements. They said that de minimis settlements compete

for limited enforcement resources and can distract already overburdened regional site teams from site cleanup. The timing of these settlements intensifies this problem because they may occur about the time the regional site teams are preparing for cleanup negotiations with the major parties.

The costs of some de minimis settlements can be large and represent a heavy burden on a region's resources. For example, in 1992, an early de minimis settlement involving 170 parties at a Region III site cost $723,000 in contract support and took 3,300 hours of EPA staff time. Despite such sizeable expenses, EPA does not routinely collect information on the costs of de minimis settlements or regularly provide special funding to the regions to facilitate them.

EPA officials also told us that certain de minimis policies have limited the number of settlements by making it difficult for minor contributors of hazardous waste to qualify for de minimis settlements. For example, until recently, EPA guidance required that before a de minimis settlement could be reached, a waste-in list--a ranking of the waste contributions of all the PRPs--had to be prepared. In effect, this policy permitted a de minimis settlement only when the waste contributions of all parties were known. A party that contributed a small quantity of waste at a site where the contributions of all other parties were not known would not be eligible for de minimis treatment.

EPA's former requirement for a waste-in list restricted the potential application of the de minimis tool. First, it limited the number of sites that could be candidates for such settlements; EPA estimates that data sufficient to prepare a waste-in list are not available at most sites. Second, because waste-in lists can be expensive to prepare, this requirement potentially increased the government's costs.

Inadequate EPA administrative guidance also limited the number of de minimis settlements, according to regional officials. SARA requires EPA to determine that the toxicity of the hazardous waste contributed by a prospective de minimis party is "minimal in comparison to other hazardous substances" deposited at a site. EPA officials believe that it was difficult to make defensible toxicity determinations under the general guidance the agency has published.

Moreover, the de minimis settlement tool did not fully protect contributors of minuscule amounts of waste, referred to as de micromis contributors, from contribution suits. In recent years, PRPs at some sites have threatened contribution suits against hundreds of such parties. Until recently, EPA did not have a policy to protect de micromis parties from contribution suits.

Recent Developments and Options for Further Action

Over the past few years, as complaints mounted that EPA was not making appropriate use of de minimis settlements, the agency took steps that appear to be increasing the use of this tool. EPA provided regions with resources, training, and guidance for de minimis settlements and supported innovative regional pilot efforts. The agency also made a small start at encouraging de minimis settlements earlier in the enforcement process, in accordance with SARA's intent. EPA has completed 10 early de minimis settlements. One pilot project is exploring the potential for completing a de minimis settlement even before the site is added to the National Priorities List (NPL).

Most recently, on July 30, 1993, EPA issued guidance that may simplify de minimis determinations and expand the use of these settlements. The guidance permits regions to make a de minimis determination without preparing a waste-in list or volumetric ranking. To determine whether a PRP is eligible for a de minimis settlement, a region need only assess the individual PRP's waste contribution relative to the volume of waste at a site. Regions may estimate the volume of waste present at the site by sampling contamination or by other methods. However, this guidance may not simplify toxicity determinations for de minimis settlements--it merely restates language from earlier guidance intended to provide a general standard for these determinations.

The July 30, 1993, guidance also identifies ways that regions can facilitate de minimis settlements. For example, they can settle with de minimis parties individually so that eligible parties will not incur transaction costs while waiting for a de minimis group to form. The guidance recommends that regions develop a strategy to inform PRPs of the benefits that may accrue from a de minimis settlement.

Also, on July 30, 1993, EPA issued guidance that would allow regions to resolve the liability of de micromis parties and provide them with contribution protection under expedited settlement procedures. How effective this guidance will be in removing de micromis parties from the Superfund process remains to be seen. If successful, the guidance will reduce the number of contribution actions taken against de micromis parties. If these parties continue to be sued, special statutory protection for de micromis parties may be needed.

Despite recent improvements, EPA has not fully addressed two key barriers to de minimis settlements. The agency has not developed a plan for funding an increased number of these settlements over the long term. Nor has the agency fully determined how many sites are potential candidates for de minimis settlements.

In the short term, EPA has instructed the regions to divert resources from other activities to achieve new de minimis goals, but it is unclear how the agency intends to fund greater use of de minimis settlements over the long term. The agency's current de minimis goals are based on historical use of the tool. In order to establish rational de minimis goals and determine future resource needs, EPA needs to conduct a comprehensive inventory of the NPL sites to identify de minimis candidates.

Targeting resources specifically for de minimis settlements could increase their use. For example, EPA has detailed headquarters attorneys to some regions to help them reach de minimis settlements. Building on this experience, regional officials recommended that EPA assemble region- or headquarters-based task forces (or "SWAT" teams) to assist with the de minimis settlements while the remedial project manager and site attorney work on other aspects of the site cleanup.

EPA could also expand its effort to encourage non-de minimis parties to provide resource assistance for de minimis settlements. At a Region IX site that has thousands of eligible de minimis parties, the PRP steering committee has agreed to help EPA develop data that the agency needs for the de minimis determination. This sharing of effort will reduce the demand on EPA's resources and foster settlement with the major parties because the moneys obtained from the de minimis settlement can be used toward cleanup.

Nonbinding Allocations of Responsibility

Some of the same problems that have limited the use of de minimis settlements have discouraged the use of NBARs. First, EPA has not assigned a high priority to, or promoted, the use of NBARs among PRP groups. For example, although EPA guidance requires that PRPs be informed early in the process about NBARs, none of the model early notice letters used in the three regions we visited mentioned NBARs. Second, preparing an NBAR, like preparing de minimis determinations, can divert the regional site team from site cleanup. And EPA has not provided additional resources specifically for developing NBARs. Finally, although there are other allocation methods, EPA guidance recommends that the NBAR be based primarily on volumetric data. However, an EPA official stated that volumetric data are available at only a minority of sites. Furthermore, some regional officials believe that an NBAR can be prepared only when volumetric data are available.

Recent Developments and Options for Further Action

EPA has not assigned a high priority to NBARs primarily because it believes that most PRPs prefer to do their own cost allocation rather than rely on EPA's. However, there is some evidence that PRPs may be more willing to accept NBARs than EPA has assumed. For example, a recent EPA pilot study demonstrated that PRPs might use NBARs more if EPA actively promoted them. In

addition, two national groups of PRPs we contacted believe that NBARS should be used more often to assist PRPs in reaching agreements on cost allocation.

EPA would be better informed about PRPs' interest in NBARs if it abided by its own guidance and notified PRPs at every site about the availability of this tool. The guidance also makes the use of NBARs contingent on EPA's receiving requests from a significant percentage of the PRPs at a site. At some sites, however, EPA may want to consider using an NBAR when negotiations have broken down. Finally, EPA guidance may be artificially restricting the use of NBARs because the agency bases its use of the tool, in part, on the availability of volumetric data, although other methods could be explored for allocating the percentage share of cleanup.

Mixed Funding

EPA has made limited use of formal mixed funding and has not promoted regional use of this tool. We agree that a cautious approach to the use of this tool is appropriate.

EPA regional staff are reluctant to use mixed funding. Although most regions have used preauthorized mixed funding, only two have done so more than once, and no applications are pending. The agency's reluctance to use mixed funding stems from concerns that this tool will compromise the Superfund program's joint and

several liability standard and EPA's ability to achieve settlements. Therefore, although EPA guidance does not prohibit the use of Superfund money in mixed-funding arrangements, EPA has not used this money to pay for "orphan shares" at sites. Orphan shares are costs associated with wastes deposited by unknown or nonviable parties. Many agency officials believe that this approach is consistent with the intent of the Superfund law. In addition, regional officials generally thought that they could facilitate settlement more efficiently through appropriate compromises with responsible parties--by, for example, waiving the right of the government to recoup all of its costs from the parties.

Regional officials also expressed concern that expanded use of mixed funding would increase transaction costs and be too expensive for the government. A regional official questioned whether greater use of mixed funding would expedite settlements or simply prolong negotiations by encouraging every PRP to seek mixed funding. Furthermore, if mixed funding were increasingly used at sites where there are no nonsettlors against whom to recover EPA's costs, federal costs would rise sharply. EPA estimates that paying for the orphan share of cleanup design and construction at sites where PRPs perform the cleanup would cost the Superfund up to $420 million annually, a sum almost equal to EPA's estimated fiscal year 1993 obligations for cleanup design and construction where EPA performed the cleanup.

Some regional officials thought that mixed funding had a limited role to play at sites where the only viable PRPs were minor contributors and where the major contributors were unknown or nonviable. But regional officials noted that even in such circumstances, when mixed funding may be warranted, cumbersome administrative procedures discourage its use. Because of these procedures, officials who had used preauthorized mixed funding were reluctant to do so again. A headquarters official acknowledged that the lengthy application, approval, and reimbursement process generates costs that reduce the apparent savings from an expedited settlement. EPA is addressing this problem by developing new guidance to streamline the application process.

Recent Developments and Options for Further Action

In the past year, EPA sponsored a study of mixed funding that identified goals--such as promoting the use of innovative technology and expediting cleanup--that might be furthered through the use of mixed funding and discussed several mechanisms for increasing the use of this tool without incurring excessive costs. EPA is considering whether any policy changes should be made as a result of this study and is developing mixed-funding pilot projects. We believe that a cautious approach to using mixed funding is appropriate, but we applaud EPA's effort to streamline preauthorization procedures and reassess the agency's use of this tool.

Alternative Dispute Resolution

EPA regions have been reluctant to use ADR techniques in Superfund cases. In 1987, EPA issued final guidance on the use of ADR in Superfund and other enforcement cases and expected each region to nominate at least one case during that fiscal year. Regional response to the initiative was slow. Before 1991, 3 of 10 regions had nominated Superfund cases, and only 2 regions had actually used ADR in Superfund settlement negotiations.

Many regional officials believe that ADR entails additional work and expense that primarily benefit PRPs. Several officials in one region we visited said that EPA should not sponsor ADR services if settlements can be achieved through traditional enforcement efforts. However, officials in regions that have used ADR techniques at several sites were enthusiastic about this tool's potential to reduce the government's transaction costs. They reported that ADR had made it possible to obtain settlements in cases that would otherwise not have been settled. In addition, Region V officials believe that the use of ADR eliminated costs usually incurred in preparing a case for referral to the Department of Justice and in protracted negotiations.

Recent Developments and Options for Further Action

Within the last 4 years, EPA has created a headquarters liaison position to coordinate ADR activities agencywide and designated ADR leaders in the regional offices, established dedicated funding for ADR activities, developed a reporting system to monitor the regions' use of the tool, provided regional training, and sponsored an ADR pilot project. These efforts to promote ADR have had some success. ADR techniques are currently being used at 15 sites, and 9 out of 10 regions have now had some experience with ADR.

EPA is moving in the right direction by taking steps to explore the possibilities for greater use of ADR. A recently announced pilot project will use ADR at about 20 sites, as well as NBARs, where appropriate. EPA's challenge is to move from pilot projects to the routine use of this tool in all EPA regions.

COMMENTS ON PROPOSAL TO ELIMINATE RETROACTIVE LIABILITY

Mr. Chairman, as you know, there have been proposals to eliminate retroactive liability in the Superfund program. These proposals call for public funding of cleanup activities at sites which were contaminated before a stipulated date, except where the disposal practices were illegal. One of the benefits claimed for this proposed system is that it would reduce transaction costs. In

our view, these proposals are not well justified for a number of reasons. First, it is premature to call for elimination of the current enforcement system, when the tools designed to reduce transaction costs within this system have not been fully tested.

In addition, proposals to abolish retroactive liability have several disadvantages. They would break the link that the present "polluter pays" principle provides between responsibility for site contamination and responsibility for the cleanup. They also would increase fund expenditures dramatically--by a billion dollars a year or more, by some estimates--and would require the repayment of parties who have already paid for cleanups. In addition, the pace of cleanups might actually slow under this system if EPA were required to manage cleanups now being managed by responsible parties and the agency's contract management problems would be compounded. Further, the proposals would remove incentives for voluntary cleanup that the present retroactive system provides. And, lastly, some litigation will continue, since disputes will arise over when waste disposal occurred and over the legality of disposal practices.

CONCLUSION

For most of the 7 years since the Congress provided EPA with tools to expedite Superfund settlements, the agency has done little to promote their use and has placed little emphasis on the need to

reduce transaction costs. As a result, the full potential of the tools to reduce transaction costs is unknown.

Within the past year, and particularly within the past few months, EPA has paid more attention to controlling transaction costs. On June 23, 1993, EPA announced plans for overcoming many obstacles to greater use of the settlement tools discussed in this statement. For example, EPA required regions to identify candidates for de minimis settlements, issued new de minimis guidance that simplified these determinations, and issued de micromis guidance. The agency also announced a pilot project, involving about 20 sites, to explore the use of ADR and NBARs. In addition, EPA will sponsor pilot projects to reexamine the possible roles of mixed funding and will consider streamlining mixed-funding procedures.

EPA's actions are evidence of a new concern for controlling Superfund transaction costs by increasing the use of the settlement tools. Whether the initiatives produce lasting improvement will depend on how well EPA manages full implementation of the effort. Before EPA can make more effective use of these settlement tools, it needs to address management issues. It needs to work toward creating an enforcement attitude that is concerned with reducing the transaction costs of Superfund's responsible parties. Specific steps toward the development of this approach include assessing the potential applicability of these settlement tools, creating

regional accountability for their use, targeting resources, reviewing administrative procedures, and making PRPs more aware that these tools are available.

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Mr. Chairman, that concludes my prepared statement. I will be glad to respond to any questions that you or Members of the Subcommittee may have.

SUPERFUND SETTLEMENT TOOLS

DE MINIMIS SETTLEMENTS

During the settlement process, potentially responsible parties (PRP) that contributed only a relatively small amount of low-toxicity waste to a site--known as de minimis parties--can incur substantial transaction costs, which may exceed their share of the cleanup costs. To provide relief, the Congress, in the Superfund Amendments and Reauthorization Act of 1986 (SARA), gave the Environmental Protection Agency (EPA) the authority to enter into expedited settlements with such parties.

De minimis settlors can be large or small companies, government entities, or individuals. At some sites, these contributors number in the hundreds or thousands.

De minimis settlements can reduce transaction costs for all parties when completed early because they end the involvement of de minimis parties and reduce the number of parties with which EPA and the major PRPs must negotiate. De minimis settlements also protect small contributors against claims by third-party PRPs for any further contributions toward cleanups. This relieves small contributors of transaction costs they might otherwise incur as defendants in contribution suits.

NONBINDING ALLOCATIONS OF RESPONSIBLITY

SARA also provides EPA with discretionary authority to issue nonbinding preliminary allocations of responsibility (NBAR). These are allocations by EPA to individual PRPs of a percentage of the total cleanup costs. NBARs are advisory--they are not binding on the government or PRPs--and "preliminary"--PRPs can make adjustments to them. According to EPA guidance, the agency can prepare an NBAR when it will promote a settlement and reduce transaction costs, especially when a significant percentage of the PRPs at a site request one. However, EPA generally leaves PRPs to work out among themselves how much each will pay toward settlement at a site.

MIXED FUNDING

SARA also authorizes EPA to share cleanup costs with PRPs through mixed-funding agreements. There are three types of these agreements: "preauthorized" mixed-funding agreements, under which PRPs perform the cleanup and EPA reimburses a portion of their costs; mixed-work agreements, under which EPA performs a discrete portion of the cleanup and PRPs perform the rest; and "cashout" mixed-funding agreements, under which EPA accepts a cash payment and agrees to perform the cleanup. Of these three arrangements, the agency prefers preauthorization because it requires the PRP,

and not EPA, to perform the cleanup. In addition to these formal mixed-funding agreements, informal or "surrogate" mixed funding occurs at sites whenever EPA agrees to settle for less than 100 percent of the costs that it might be able to recover from settling parties.

ALTERNATIVE DISPUTE RESOLUTION

The Superfund law also authorizes EPA to use alternative dispute resolution (ADR), which involves a neutral third party to aid in the resolution of disputes without litigation. SARA provides that EPA may enter into arbitration for cost recovery claims, provided that the claims do not exceed $500,000. EPA has broader authority to use other ADR techniques--such as mediation, minitrials, and fact-finding--to resolve other disputes under the Administrative Dispute Resolution Act (P.L. 101-552) and the Executive Order on Civil Justice Reform (E.O. 12778). The executive order mandates that attorneys representing the government use ADR techniques to expedite the prompt and proper settlement of federal disputes.

OTHER STRATEGIES FOR REDUCING TRANSACTION COSTS

In addition to the tools created by the Superfund Amendments and Reauthorization Act of 1986, EPA has other means of reducing transaction costs, including strategies for reducing costs that arise when recalcitrant PRPs refuse to settle. "Recalcitrant" PRPs share responsibility for the cleanup but refuse to negotiate and settle their share of the costs.

Recalcitrant PRPs increase transaction costs for settling PRPs and the government. Settling PRPs incur the costs of negotiating and allocating among themselves the recalcitrant PRPs' shares of the cleanup costs. They may also incur the expense of suing recalcitrant PRPs for their shares of the costs. EPA's costs also increase when the agency is involved in protracted negotiations or is forced to take enforcement action against recalcitrant PRPs. The EPA regions we visited employ a number of strategies intended to decrease transaction costs by discouraging recalcitrance. In addition, certain court jurisdictions and states have adopted civil penalties for recalcitrance.

EPA Enforcement Practices to Discourage Recalcitrance

EPA regions have developed a variety of enforcement practices to discourage recalcitrance and thereby reduce transaction costs. These strategies penalize PRPs that refuse to settle and reward those that do settle. Some regions carve out a disproportionately large share of the cleanup costs for recalcitrant PRPs, rewarding the settlors with a smaller share.

In addition, some EPA regions penalize PRPs that are slow to settle by graduating the premiums that the agency charges on certain settlements. Graduated premiums, or "delay damages," are used when EPA accepts a cash payment in settlement instead of requiring the PRPs to perform the cleanup. Settlors that do not participate in the cleanup pay a premium--over and above their share of the cleanup costs--to cover unanticipated future costs. Regions that use graduated premiums require each successive round of settlors to pay a higher premium. For example, in one case, EPA charged the first group of settlors a premium that was 160 percent of the group's cleanup costs. It charged the second group a 260-percent premium. The remaining PRPs were required to pay a 900-percent premium. PRPs that settled early were thus rewarded for their cooperation.

APPENDIX II

APPENDIX II

Proposed Legal Strategies for Reducing Recalcitrance

Penalties for recalcitrance have also been imposed by state law and the courts. Some parties or groups have recommended that these and other penalties be authorized or required by the Superfund law. The various penalties would compensate PRPs that incur litigation expenses in order to pursue recalcitrant PRPs for their fair share of cleanup costs. By creating more severe consequences for being found liable in a contribution action, these penalties would also discourage recalcitrance.

Potentially recalcitrant PRPs would be more likely to participate in negotiations, according to some PRP attorneys, if they were obligated, upon being found liable in a contribution action, to pay the plaintiff's legal fees. One court has, in fact, allowed a plaintiff in a contribution suit to recover attorney fees. However, attorney fees are not consistently awarded--two other courts have declined to award attorney fees.[1] Some argue that awarding attorney fees would reduce recalcitrance if it were applied consistently in contribution actions. However, to ensure

[1]In General Electric Co. v. Litton Industrial Automation Systems, Inc., 920 F.2d 1415 (8th Cir. 1990) recovery of legal fees was allowed. In Key Tronic Corp. v. the United States of America, 984 F.2d 1025 (9th Cir. 1993) and Stanton Road Associates v. Lohrey Enterprises, 984 F.2d 1015 (9th Cir. 1993) recovery of legal fees was denied.

that every recalcitrant PRP risked incurring this cost, CERCLA would have to explicitly permit successful contribution plaintiffs to recover legal fees.

A paper published by Clean Sites, a nonprofit organization working to facilitate the cleanup of hazardous waste sites, advocates permitting successful contribution plaintiffs to recover up to 10 percent in excess of the defendant's fair share of the cleanup costs. For example, if a court found that a defendant's share of the cleanup costs amounted to $150,000, the plaintiff could collect up to $165,000. A statutory amendment to CERCLA would also be necessary to create this penalty.

The Clean Sites paper also discusses the potential use of civil penalties modeled after ones recently created by New Jersey and California. These states have enacted laws allowing parties that clean up state hazardous waste sites to collect treble damages from recalcitrant parties. The states retain a portion of the collected damages. To obtain damages, a party must clean up the site and then successfully sue a party that violated a state order to perform the cleanup. In addition, New Jersey requires the party to obtain state approval to seek treble damages. These laws were enacted primarily to create incentives for private parties to clean up hazardous waste sites voluntarily. Anyone--whether responsible

or not for contaminating a site--can clean up the site and seek treble damages.

Officials in both states believe this penalty for losing a contribution action will also discourage recalcitrance, but it is too early to fully evaluate the impact of these laws. The New Jersey law was enacted in December 1990, and the California law went into effect in January 1993. As of August 1993, New Jersey had approved one request for damages, and in approximately five other cases the state had sent a letter to the recalcitrant parties warning that treble damages would be authorized if the parties failed to settle within a certain number of days. According to a New Jersey official, the recalcitrant parties agreed in two cases to participate in the cleanup after being threatened with treble damages.

Creating new civil penalties for PRPs that lose contribution actions in Superfund cases might discourage recalcitrance. However, such penalties might also increase transaction costs, at least in the short term, or unfairly penalize PRPs that are not recalcitrant. Some EPA officials and a PRP attorney we spoke to are concerned that allowing contribution plaintiffs to obtain damages might encourage contribution actions and spawn more Superfund litigation. Advocates of civil penalties counter that, in the long term, the penalties would encourage potentially

recalcitrant PRPs to enter into cleanup negotiations with other PRPs, thereby reducing the number of contribution suits.

Some PRP attorneys are concerned, however, that increasing the penalties for being found liable in a contribution action might inadvertently reduce the fairness of the Superfund program. If threatened with damages--particularly treble damages--defendants in contribution suits might feel pressured to settle with the plaintiffs even if they had legitimate grounds to contest their liability.

The experiences of New Jersey and California may provide useful information on the effect of penalties for recalcitrance. If civil penalties discourage recalcitrance without increasing litigation or unfairly punishing nonrecalcitrant parties, it might be appropriate to consider civil penalties as a means to encourage participation in Superfund settlement negotiations.

SETTLEMENT TOOL CASE STUDIES

The following exemplify EPA's recent use of the settlements tools.

DE MINIMIS SETTLEMENT:
TONOLLI SITE

At the Tonolli site in Nesquehoning, Pennsylvania, EPA Region III used its de minimis authority to resolve the liability of small contributors of hazardous waste and to reduce their transaction costs. Typically, Region III waits for de minimis parties to propose that EPA offer a de minimis settlement. In this instance, EPA selected Tonolli as a pilot project to assess the potential for itself initiating de minimis offers. EPA offered eligible PRPs an "early" de minimis settlement, allowing them to settle before the agency completed its final estimate of the cleanup costs. PRPs that accepted this offer avoided the transaction costs they would have incurred while awaiting the final estimate of cleanup costs and then participating in settlement negotiations.

Background

Tonolli is a 20-acre site where batteries were stripped for their lead content until 1985. Arsenic, cadmium, lead, and

chromium from the former battery recycling facility have contaminated the site. EPA's final cleanup estimate was $17 million. EPA identified about 400 PRPs as eligible for a de minimis settlement--that is, EPA considered them to be small contributors because they had contributed less than 1 percent of the hazardous waste at the site--and named 19 PRPs as "major" contributors.

De Minimis Offer

Departing from its practice of waiting for PRPs to propose a de minimis settlement, Region III notified PRPs of their eligibility and invited them to a general meeting at which regional officials explained the de minimis process. Many small contributors that attended the meeting were unfamiliar with the Superfund program and de minimis settlements. In June 1992, EPA offered a de minimis settlement to about 400 PRPs.

Two rounds of de minimis settlements took place. In the first round, 170 de minimis PRPs agreed to pay their share of the cleanup costs plus a 65-percent premium for unanticipated future cleanup costs, for a total of $3.5 million. EPA allowed some settlors to pay in installments. Subsequently, some of the remaining eligible PRPs asked for a second opportunity to settle because they had not clearly understood the de minimis process. EPA made a second

offer, attaching a 10-percent premium over the terms of the first settlement as a disincentive for future settlors to delay. In this round, thirty-three PRPs settled for $542,000.

Results

According to regional officials and a PRP representative, the Tonolli pilot project reduced transaction costs. According to regional officials, 203 PRPs accepted a de minimis settlement--and most of these PRPs settled early--lowering their transactions costs from what these costs would have been if the PRPs had been compelled to participate in negotiations with the major parties or had been involved with third-party litigation because they had not settled. An attorney representing the de minimis parties stated that they had avoided significant transaction costs that they would have incurred if they had become defendants in a third-party contribution action. According to the PRP representative, EPA's settlement offer brought a larger number of PRPs into the settlement process than expected.

EPA obtained settlement agreements of over $4 million toward cleanup. With fewer parties, EPA believes it will be able to manage negotiations more efficiently with the major PRPs--thereby avoiding enforcement costs. Region III plans to initiate de minimis settlements at other sites.

According to regional officials, the settlement was resource intensive. The region estimates that it took 3,300 hours in staff time for these de minimis settlements and $720,000 in contractor support for preparing a waste-in list and performing administrative tasks. Region III believes that the de minimis settlement delayed cleanup at this site and other sites in the region because it diverted the site team.

NONBINDING ALLOCATION OF RESPONSIBILITY: HASSAYAMPA LANDFILL SITE

At the Hassayampa site, near Phoenix, Arizona, EPA Region IX assisted PRPs in their allocation negotiations by providing an NBAR--a nonbinding allocation of percentage shares of the cleanup costs among the PRPs at the site. Region IX, like other regions we visited, does not routinely notify PRPs of the availability of an NBAR. But, spurred by a headquarters pilot project to explore expanding the use of the NBAR tool, Region IX offered an NBAR at Hassayampa. According to a PRP representative, the PRPs based their allocation on the NBAR, which facilitated their allocation decisions and reduced their transaction costs.

Background

The Hassayampa Landfill site, located in Maricopa County 40 miles west of Phoenix, has operated as a municipal landfill since 1961. In addition to municipal wastes, the landfill accepted hazardous industrial wastes between April 1979 and October 1982. Site contaminants include volatile organic compounds, heavy metals, pesticides, and lime wastes. EPA's estimate of the cleanup costs was $6.1 million. The NBAR identified 138 PRPs.

NBAR Issued

Region IX notified the PRPs that EPA would offer an NBAR. According to a PRP representative, the PRPs were initially skeptical about the prospect of using an NBAR. But EPA worked with the PRPs and incorporated elements of the PRPs' existing allocation efforts in developing the NBAR.

PRPs at Hassayampa may have been receptive to EPA's allocation assistance because allocation disputes had taken place among the PRPs before cleanup negotiations began. PRPs that had studied treatment options at the site under EPA's direction and had reimbursed EPA for oversight costs had filed a contribution action against other PRPs. By the time negotiations for cleanup began,

the PRP community had engaged in a legal dispute and had incurred significant transaction costs, according to a PRP representative.

EPA issued the NBAR on September 28, 1992, and revised it on May 21, 1993. The PRPs agreed to use EPA's NBAR as the basis for allocating percentage shares. As of September 1993, a final settlement had not been signed, but EPA anticipates final settlement soon.

Results

A PRP representative told us that the NBAR facilitated PRP allocation decisions at Hassayampa and reduced PRP transaction costs. The representative stated that the NBAR had reduced the potential for protracted PRP negotiations because the PRPs accepted the government's allocation advice as credible. He characterized the savings in transaction costs as marginal in comparison with the transaction costs already incurred as a result of the contribution suit at the site. Nevertheless, the representative believed that the NBAR had improved cooperation among the PRPs over final cleanup negotiations and had reduced transaction costs.

A regional official also told us that the NBAR had facilitated PRP allocation. But he noted that the NBAR was resource intensive. The site team was heavily involved in the developing the NBAR. For

example, the regional site team had to conduct a time-consuming document review to respond to the relatively few questions raised about the draft allocation. EPA has not yet calculated the cost of preparing the NBAR. The cost of preparing the NBAR will ultimately be borne by the PRPs as part of the settlement.

ALTERNATIVE DISPUTE RESOLUTION:
SULLIVAN'S LEDGE SITE

EPA officials who have used ADR are generally enthusiastic about using these techniques, particularly in cases that might otherwise not be settled. A region I official said that using mediation during negotiations at the Sullivan's Ledge site in New Bedford, Massachusetts, saved the case attorney a substantial amount of time, allowed the agency to authorize the use of a less expensive remedy, and laid the groundwork for a good working relationship among parties that would have to cooperate for decades.

Background

Sullivan's Ledge is a 12-acre site in a residential area of New Bedford, Massachusetts, which was operated as a quarry until about 1932. After 1935, the city of New Bedford permitted the pits to be used for the disposal of hazardous materials and other

wastes. Air and groundwater on and around the site are contaminated with volatile organic compounds, inorganic compounds, polycyclic aromatic hydrocarbons, and polychlorinated biphenyls.

The site consists of two sections, called "operable units." In 1992, when the case was nominated for mediation, 14 PRPs had already agreed to clean up the first operable unit, and EPA was seeking a commitment to clean up the second.

Use of ADR Techniques

Region I nominated the site for mediation because the case involved complex issues affecting numerous private parties and a municipality. EPA regional staff hoped that mediation would allow them to avoid resource-intensive litigation.

Several factors made the site particularly appropriate for the use of ADR. The city of New Bedford, which owned and operated the site, was among the PRPs that refused to participate in the first settlement. The presence of municipal PRPs at a site may complicate negotiations because municipalities often have limited cash resources to contribute toward the cost of cleanups and may be unfamiliar with Superfund's liability provisions.

In addition, the projected cost of cleaning up the second operable unit depended on coordinating the remedial tasks at this unit with the work being carried out at the first operable unit. If the PRPs from the two operable units could agree to coordinate their work, they stood to reduce their remedial costs at the second operable unit by $5 million, and EPA stood to lower its oversight and enforcement costs.

A mediator brought together the parties from both operable units, helped them fashion settlement offers, and eventually helped identify tasks the city could perform in lieu of cash payments. The total cost of using mediation during formal negotiations was approximately $30,000, half of which EPA paid.

Results

Two PRPs, including the city of New Bedford, agreed to clean up the second operable unit. The PRPs from both operable units agreed to coordinate their tasks, allowing EPA to authorize the use of a remedy at the second operable unit that was expected to cost $2.8 rather than $7.8 million. EPA is currently suing the other two PRPs for their liability at the site.

The parties that participated in the mediation were pleased with the results. EPA officials said that mediation kept the

parties negotiating at several decision points when they would otherwise have pursued litigation and helped ensure that negotiations remained on schedule. In addition, regional officials said that the mediator took over difficult, time-consuming communications with PRPs, giving the officials more time for other case management activities. Finally, regional officials felt that mediation had laid the groundwork for good relationships among parties that would have to work together for decades to clean up the site.

According to EPA officials, PRPs from the first operable unit reported that mediation brought them to the negotiating table when they would otherwise not have come and kept them participating. In addition, the PRPs reportedly viewed EPA's participation in mediation as a sign of the agency's good faith.

PRPs from the second operable unit had similarly favorable views of the mediation process. A New Bedford official said that using a mediator made negotiations much more efficient, helped ensure that the municipality was treated fairly, and provided expertise that the city would otherwise have had to obtain from expensive Superfund attorneys and consultants. He added that he would not hesitate to use ADR again. A PRP attorney said that the mediator helped to structure the settlement and negotiate realistic schedules with EPA.

MIXED FUNDING:
HARVEY & KNOTT DRUM SITE

The perception that Superfund liability is unfair may discourage PRPs from settling, particularly when one PRP is asked to pay for an entire site because other financially viable PRPs have not settled. In such an event, settlement negotiations may be protracted or unproductive, increasing transaction costs for all the parties. At the Harvey & Knott Drum site in Delaware, Region III used mixed funding to expedite cleanup and make the settlement process more equitable.

Background

The Harvey & Knott Drum site is a 2-acre parcel of land in New Castle County, Delaware. The site, which was used as an open dump and burning ground, is contaminated with polychlorinated biphenyls, volatile organic compounds, and heavy metals. In addition to the owner and operator, two major PRPs sent waste to the site--General Motors (GM) and Chrysler Corporation.

Results

EPA used mixed funding to obtain a commitment from GM to clean up the site. GM was willing to undertake the cleanup but refused

to pay for the entire site when Chrysler--a financially viable PRP--refused to join in the settlement discussions. Chrysler denied that the wastes it had contributed to the site were hazardous. To persuade GM to clean up the site, EPA promised to reimburse GM for one-third of its cleanup costs, or $3,086,000.

EPA is attempting to recover these and other costs from PRPs that have not settled. The Department of Justice has filed a cost recovery action against Chrysler and the owner of the site, seeking the reimbursement promised to GM, as well as one-third of the costs that EPA will incur in overseeing activities at the site.

(160242)

Statement of Lloyd S. Dixon before the

Environment and Public Works Committee,
Subcommittee on Superfund, Recycling, and Solid Waste,
Senator Frank Lautenberg, Chairman
United States Senate

November 4, 1993

Mister Chairman and Members of Subcommittee, thank you for inviting me to participate in your hearings on the Superfund program. My name is Lloyd Dixon, and I am an economist at RAND. The views and conclusions presented here are my own and should not be interpreted as representing those of RAND or any sponsors of the research. I base my comments today on several RAND reports, including a report we are releasing today entitled "Private-Sector Cleanup Expenditures and Transaction Costs at 18 Superfund Sites", which I coauthored with Deborah Drezner and Jim Hammitt.[1]

Many critics of Superfund argue that its broad liability provisions shroud the program in litigiousness and generate steep transaction costs. Transaction costs are costs that do not contribute to the investigation or cleanup of a site. Rather, they are related to the assignment of liability among the parties involved at the site and their insurers. Our research attempts to measure these transaction costs. We hope that this information will better inform the debate on the costs and benefits of using a liability approach to deal with hazardous waste cleanups and on what modifications in the Superfund program might reduce transaction costs.

I will report on two different measures of transaction costs. The first is the share of transaction costs in private-sector expenditures through 1991. The second is a projection of the share when cleanup is complete. While perhaps more relevant in evaluating Superfund's liability approach, the latter measure is much more difficult to estimate. To preview our findings, the midpoint of our estimate of the

[1]Dixon, Lloyd S, Deborah S. Drezner, and James K. Hammitt, *Private-Sector Cleanup Expenditures and Transaction Costa at 18 Superfund Sites*, RAND, MR-204-EPA, 1993.

transaction-cost share for private-sector potentially responsible parties (PRPs) is 32 percent through 1991. Simulations run from 19 to 27 percent for the PRP share at completion with the most likely estimate currently at the upper end of this range. For insurers, the comparable shares are 88 percent through 1991 and approximately 70 percent at completion. Total private-sector expenditures at Superfund sites is the sum of PRP and insurer expenditures. The midpoints of our estimates for the transaction-cost share for combined expenditures to date is 35 to 40 percent and 25 to 35 percent at completion. In addition to discussing these estimates, I will also discuss how transaction-cost share varies by size of firm and what reforms might be considered to reduce transaction costs.

WHAT IS OUR BEST ESTIMATE OF TRANSACTION-COST SHARE TO DATE?

Our research has documented that Superfund has generated substantial transaction costs. At a sample of 18 NPL sites, we estimate that transaction costs were 32 percent of expenditures by private-sector potentially responsible parties (PRPs) between 1981 and 1991.

This estimate is based on the expenditures of 108 of the 1000s of PRPs at the 18 study sites. As might be expected, there is considerable uncertainty--from 20 to 44 percent--around the 32 percent estimate for the study sites. There is also uncertainty on whether the experience at the 18 study sites is characteristic of the NPL as a whole. More work is needed to project the transaction-cost share for private-sector PRP expenditures through 1991 at all NPL sites from our sample, but we believe that 32 percent is a reasonable point estimate for all sites with RODs for several reasons. First, the characteristics of the 18 study sites are roughly similar to those of a larger group of sites with RODs where we had reason to believe that there are substantial PRP expenditures. Second, the transaction-costs shares for the larger firms at the study sites are similar to those of five very large industrial

firms at a much larger number of sites, as reported in our previous study on transaction costs.[2]

PRPs frequently turn to their insurers for reimbursement of costs related to hazardous waste cleanup, which induces transaction costs related to the resolution of these claims. Thus, we must add insurer expenditures to PRP expenditures to determine transaction-cost share for total private-sector expenditures. In our previous study, we reported that transaction costs were 88 percent of insurer expenditures between 1986 and 1989 and 69 percent for claims closed with payment during that period. About one-half of insurer transaction costs went to defend their policyholders. The other half went to contest whether their policies covered PRP claims for cleaning up hazardous waste sites. Simulations we have run suggest including insurer expenditures may well cause the 32 percent point estimate for PRP expenditures alone to rise to 35 or 40 percent for combined private-sector expenditures to date.

WHAT IS TRANSACTION-COST SHARE LIKELY TO BE WHEN CLEANUP IS COMPLETE?

We have found that, so far, transaction costs tend to be loaded toward the beginning of the cleanup process. Thus, the transaction-cost share to date may not be a good estimate of what it will be when cleanup is complete. Not many sites have finished the cleanup process, so there is a great deal of uncertainty in what the ultimate share will be. Simulations under various scenarios result in final transaction-cost shares between 19 and 27 percent for PRPs at completion with our best estimate at the upper end of this range.

In our previous study we also found that transaction costs were loaded toward the beginning of the life cycle of an insurance claim and that the share for claims closed between 1986 and 1989 was 69 percent. Simulations we have run combining expected expenditures of PRPs and insurers at completion suggest that the combined share at completion will range between 25 and 35 percent, or a decline of between 5 and 10 percent over that observed through 1991. The decline may well be

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[2]Acton, J. P. and L. S. Dixon, *Superfund and Transaction Costs: The Experiences of Insurers and Very Large Industrial Firms*, RAND, R-4132-ICJ, April 1992.

greater if transaction-cost share in the later stages of the cleanup process drops lower than that observed so far. A decline might not even materialize if firms wait until the end of the cleanup process to recover PRP costs from other PRPs or their insurers.

HOW DOES TRANSACTION-COST SHARE VARY BY SIZE OF FIRM?

In our studies of private-sector transaction costs, we found enormous variation in transaction-cost share by size of firm. We found that transaction-cost shares for firms with annual revenues over $100 million were about 20 percent.

In contrast, we found much higher transaction-cost shares for smaller PRPs. We found that on average, transaction costs accounted for approximately 60 percent of the outlays of firms with annual revenues less than $100 million. The high transaction-cost share for smaller firms does not appear to be due to firm size itself, but rather because small firms tend to account for a small proportion of the waste at a site. There appears to certain fixed costs to mounting a defense at a Superfund site, and since small firms account for a small share of the waste at a site, they do not incur sufficiently large cleanup costs to offset these fixed costs.

WHAT REFORMS MIGHT BE CONSIDERED TO REDUCE TRANSACTION COSTS?

Our work has demonstrated that Superfund has induced considerable transaction costs at the 18 study sites and raises doubts whether Superfund's liability approach as currently implemented is an efficient way to cleanup the nation's hazardous waste sites. Whether these transaction costs can be justified depends on the benefits of the liability approach, such as voluntary cleanups and site discoveries, what alternative approaches are possible, and the transition costs of moving to an alternative approach. Within the context of a liability approach, there are a number of reforms that could be considered that may reduce transaction costs. The outcomes of all these reforms are uncertain and they all drawbacks. Possible reforms include the following:

- **Enhanced *de minimis* buyouts.** Our research suggests that PRPs with small volumetric shares spend more on transaction costs than they do on cleanup. One way to reduce these transaction costs may be to remove these parties from the cleanup process as soon as possible. The drawback of enhanced *de minimis* settlements would be that either the PRPs remaining at the site or the government would then bear an increased risk of cost overruns or failed remedies.
- **Proportional liability.** PRPs we have interviewed frequently tell us that they are willing to pay for their share of the waste at a site, but will fight against paying someone else's. A PRP could be required only to pay for its share of the waste at the site and the government could pick up the orphan shares. Government funds, however, would be needed to cover these costs.
- **Arbitration mechanisms for allocating liability.** PRPs currently allocate liability among themselves, and PRPs incur substantial transaction costs in the process. By substituting an arbitration or other non-litigative process, perhaps under government aegis, it may be possible to reduce these transaction costs. Experience has shown, however, that the success of such programs depends on how well they are designed and implemented.
- ***De maximis* buyouts.** Many PRPs with larger volumetric shares tell us they are willing to pay for their share of a cleanup, but because they are never released from liability they have reduced incentive to settle. Provisions that allow these PRPs to buy out of the site, even at a considerable premia, could encourage settlement, and decrease transaction costs. The drawback of this reform is again that it would transfer risk for cost overruns or remedy failure to the remaining PRPs or the government.
- **Relaxed cleanup standards.** PRPs frequently fight against what they perceive to be overly stringent cleanup standards or unnecessarily expensive remedies. This produces substantial

transaction costs. It is likely that less stringent cleanup standards and less expensive remedies would reduce these transaction costs. The savings in transaction costs, however, must be weighted against any increase in risk to human health and the environment.

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RAMAPO COLLEGE OF NEW JERSEY

November 1, 1993

Senator Frank Lautenberg
c/o Leonard Shen
Senate Environment and Public Works Committee
Hart Building
Room 505
U.S. Senate
Washington, D.C. 20510

Dear Senator Lautenberg,

I am submitting the following testimony in order to call your attention to psycho-social and community impacts of the SUPERFUND Program. Coming from such maturing fields as Social Impact Assessment and Environmental Design Research, which reflect the interdisciplinary intent of NEPA, as well as from the fields of Environmental Psychology, Environmental Sociology and from the other environmental social sciences, a substantial body of research on contaminated communities has been created. This work is substantive and pertinent to the task of your committee. You can take pride that some of the most productive researchers in this area are based at New Jersey Universities (including Neil Weinstein, Peter Sandman, Caron Chess, William Hallman, Celene Krause, and Lee Clarke at Rutgers University and Margaret Gibbs at Fairleigh Dickenson University). I would urge that these impact issues be considered during future hearings and reviews of SUPERFUND and other laws relevant to community contamination issues.

If I can provide any additional information or be of further service in this matter, please do not hesitate to contact me.

Sincerely,

Michael R. Edelstein

Michael R. Edelstein, Ph.D.
Professor of Psychology

THE IMPACTS OF SUPERFUND ON PEOPLE:
Psycho-Social and Community Effects
Relevant to the Reauthorization of the Superfund Program

by Michael R. Edelstein, Ph.D.
Institute for Environmental Studies
Ramapo College of New Jersey[1]

Testimony Submitted to the
Senate Environment and Public Works Committee
October 31, 1993

INTRODUCTION

It is the purpose of the following testimony to describe how psycho-social and community impact assessment can contribute to significant improvements in the SUPERFUND process. The reasoning draws upon the growing effort by social scientists to understand the impacts of environmental contamination upon proximate residents. This area of study began in the late 1970's in response to the events at Love Canal and other first-generation contaminated communities. An early milestone in the field was the publication of the book Love Canal: Science, Politics and People by Adeline Levine of S.U.N.Y. Buffalo (Lexington Press, 1982). Two other sociologists contributed an additional vital early study of Love Canal (Fowlkes and Miller, 1982). An additional early source of research came as an outgrowth of research on the impacts of the Three Mile Island nuclear disaster (Baum, 1983). At the same time, this writer had completed a psycho-social impact for the expansion of a sanitary landfill (Edelstein 1980), a study of a sludge spreading project (Edelstein 1985/6) and the study and report on the impacts of contamination from the Jackson Township, New Jersey municipal landfill (Edelstein, 1982). Margaret Gibbs provided an early study of psychological damage for the Jackson incident (Gibbs, 1982). By the time that this author provided an overview of the emerging field in Contaminated Communities: The Social and Psychological Impacts of Residential Toxic Exposure in 1988 (Edelstein, 1988), a dozen other social scientists had made important contributions to an emerging area of study (see, for example, Erikson, 1989; Hallman and Wandersman, 1989; Gill and Picou, 1989). By 1993, scores of researchers have created a significant body of literature in support of an understanding of contamination as a psycho-social

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[1] Michael R. Edelstein, Institute for Environmental Studies, Ramapo College of New Jersey, 505 Ramapo Valley Road, Mahwah, New Jersey. 201-529-7745.

and community phenomenon (see the appended list of selected books in the field). **Importantly, it should be recognized that there is a remarkable degree of consistency and convergent validity in the study of the impacts of contamination on people. We can speak with a degree of confidence on this topic absent from many areas of social inquiry.**

There are several reasons why the referenced literature should be considered in the reauthorization of SUPERFUND. First, because SUPERFUND reflects a principal governmental mechanism for addressing the consequences of people-endangering contamination, the psycho-social and community impacts of contamination have direct relevance to the shape of this program. Second, because much of the research has occurred at sites that were either on the Federal National Priority List (NPL) or listed in state Superfund programs, the literature offers a partial evaluation of program success. Third, central to the workings of SUPERFUND is the issue of "acceptable risk." Residents of contaminated communities must play a central role in determining the range of tolerance for environmental hazards in the communities where they live. What is acceptable for experts living elsewhere may not be the same as what is acceptable for local people. Fourth, the literature is suggests ways of reducing adverse impacts that can be incorporated into the reauthorization. Fifth, the literature further suggests ways of evaluating and monitoring the new SUPERFUND that will assist in future program refinements.

In order to streamline this presentation, reference will be made primarily to the author's own work in this field, which includes studies and evaluations of numerous contamination events, the response of government and the success of "clean-up" efforts. Beyond work described on the attached vita, including research at several Federal SUPERFUND sites, the author is currently working on three relevant books in various stages of completion, Poisoned Places, Environmental Stigma, and Hazardous Hollows: Toxic Contamination in an Appalachian Community. As the attached selected bibliography underscores, there are other social scientists who have made fundamental contributions to this literature. Comprehensive input to the SUPERFUND review would benefit greatly by an examination of the breadth of work in this field. The following testimony will, hopefully, underscore the potential benefit of this review.

PSYCHO-SOCIAL AND COMMUNITY IMPACTS OF CONTAMINATION

For those who come to view themselves as its victims, contamination throws normal life into crisis (see Edelstein, 1988). In particular, contamination challenges both the **lifestyle**, the normal patterns of activity that comprise daily life, and the **lifescape**, the fundamental assumptions that undergird people's basic understanding of their lives. For the individual and family, as well as for the community, it

represents a challenge to coping resources, a factor affecting the quality of relationships (i.e., the presence of conflict or consensus; the presence of environmental stigma and distrust), and a major impediment to emotional well-being.

The Impact of Contamination on Lifestyle

From a psychosocial perspective, lifestyle reflects the basic pattern of behaviors that comprises daily life within a society. Individuals exercise only a limited range of choices within socio-cultural and physical limits. Regardless, they tend to view their way of life as a reflection of choice and to expect that patterns of normal behavior will be able to continue.

Residents of contaminated communities are often confronted with the need to make concrete changes in lifestyle. They must adjust their daily lives to accommodate new realities demanded by the discovery and announcement of the contamination, such as stopping their families' use of tap water, foregoing use of part or all of their house, yard or community, relocating or discovering that they are unable to relocate, abandoning such activities as entertaining, gardening, picking fruit, hunting, and fishing and curtailing their childrens' use of the out-of-doors. Beyond the disruption, inconvenience, curtailment and loss involved in these lifestyle accommodations, victims of contamination additionally become aware of the significance of these adjustments as creating fundamental changes in their way of thinking about daily life. For victims of contamination, the disruption of daily life is both a nuisance and a threat.

Lifescape and Crisis

Beyond behavior, there is a cognitive component of the lifestyle that I term the lifescape. Lifescape consists of the basic assumptions and beliefs that underlie the lifestyle. Americans generally tend to assume that individuals exert a great deal of control over the course of their lives as socially autonomous entities. We tend to believe that others will justly reward or punish us according to our deeds; that help will be offered if we are in need; and that, despite our cynicism, government will aid us if all else fails. We tend to believe that the home is a secure respite from the social and physical dangers that surround us; frequently the community holds similar connotations. To us, the physical environment is a benign realm---objectively separate from our own existence---that serves as a useful backdrop and reservoir of resources for our activities. Finally, we tend to assume that we will be healthy until proven otherwise.

Perceived contamination forces a reassessment of these basic lifescape assumptions (see Figure 1). The course of one's health is likely to be questioned. The sense of control over one's

future is now in doubt. The home and community is seen as having been violated and now may be a source of danger. The physical environment is now feared, both as a source of potential unseen dangers and also because the victim now understands just how fragile and interconnected the surrounding environment is. Finally, social distrust is a frequent outcome of contamination, resulting from the fact that contamination is "human caused," from the stigma associated with victimization and from the failure of others, particularly government, to help in a competent manner.

Previous to Contamination	After Contamination
HEALTH OPTIMISM	**HEALTH PESSIMISM**
PERSONAL CONTROL	**LOSS OF CONTROL, DISABLED**
HOME IS SECURE, VALUED	**INVERSION OF HOME/ PLACE**
ENVIRONMENT IS BENIGN	**ENVIRONMENT IS MALEVOLENT**
SOCIAL AND INSTITUTIONAL TRUST	**DISTRUST**

Figure 1: **SHIFT OF CORE LIFESCAPE ASSUMPTIONS WITH CONTAMINATION** (after Edelstein 1988).

Coping Impacts of Contamination

Beyond behavior and cognition, there are also emotional impacts of contamination. While individual baseline emotional states vary, and potentially serious stress can be encountered during normal life, serious emotional upset routinely occurs with the disruption of lifestyle and the contradiction of lifescape. Such turmoil creates a crisis where individuals attempt to cope despite changing rules and assumptions. The frequent result is individual psychological dysfunction and social upheaval and confusion. Such dysfunction, including depression, can last long past the onset of the contamination event and is particularly persistent with this type of disaster.

Stressful coping impacts are also encountered within family units, where blame and argumentation, demands on limited time and other pressures related to the contamination event may change the tenor of family life in a negative way. Similarly, conflict may occur between neighbors and within communities among those having different degrees of impact from the contamination, among those differing in their belief in contamination and between those who see themselves as affected and outsiders to the contaminated area.

Particularly of note in terms of coping pressures are the "disabling" aspects of contamination events, demanding that people surrender control over major areas of their lives to officials and experts. Most people are ill-prepared, emotionally and in terms of competence, for the demands of such events. The contamination context requires trust that government and experts will solve problems and make proper decisions so as to represent the interests of the victims. When this often does not seem to be the case, there may be little that the victims can do unless they band together to regain power, develop alternative sources of information and offer mutual support. Such enabling responses are themselves challenging.

Finally, one frequently encounters "environmental stigma," the social devaluing of contaminated places, and those associated with them. The theory of environmental stigma can be used to understand the disaffection victims feel for their own environments after contamination and the frequent rejection and blaming of contamination victims by outsiders. Environmental stigma also explains the frequent finding that the desirability and value of property diminishes after contamination. For contamination victims the irony of environmental stigma is expressed by the inversion of home---even as affected residents lose their attachment to home and now seek to move, their mortgages force them to remain because their property is unsalable.

SUPERFUND IS A CAUSE OF STRESS, ENVIRONMENTAL STIGMA AND SOCIAL CONFLICT

Ironically, the major contributor to adverse psycho-social and community impacts is not the hazardous exposure, per se, but rather the social response to contamination. Because government is viewed as the party responsible for protecting people from hazardous exposures, the response of government is central to people's ability to cope with contamination. The shape and functioning of the SUPERFUND Program, therefore, contributes directly to the impacts of contamination by giving form to this government response. Among the characteristics of the SUPERFUND program that contribute to negative psycho-social impacts are the following.

Delay. SUPERFUND, created in 1980, has been characterized by delay. Delays occur in the original characterization and evaluation of contamination sites as a step toward listing on the NPL, the decisions about whether Federal or State programs will govern the process, the selection of consultants, the RI/FS process, the issuance of Records of Decision, and the implementation of cleanup activities.

The GAO (Hembra, 1993; GAO, June 1993) describes the extent

of the programs' "sluggishness." In 1986, only 25 of 888 SUPERFUND sites had been cleaned up. In contrast, by 1992 the number of completed sites had only grown to 40, but another 387 additional sites had been placed on the NPL. Thus, 97% or 1,235 sites were still in process. The average duration of cleanup was estimated to be a decade. The rate of action was particularly low for Federal SUPERFUND sites. These figures apply only to sites already listed on the NPL. More than 7,000 sites were awaiting final evaluation for possible addition to the NPL, some 34,000 were awaiting NPL evaluation and as many as 130,000 more contaminated sites were predicted to exist. New efforts by EPA to accelerate the process will easily be overwhelmed with numbers such as these. Furthermore, efforts to accelerate action may come at the expense of public input and/or careful assessment of impacts and alternatives.

What are the psycho-social impacts of such delay? At nearly all SUPERFUND sites, the surrounding community remains during the cleanup process. As a result, SUPERFUND activities become community events, serving to perpetuate the disruption that characterized contamination to begin with. The duration of a contamination event represents a period of limbo for affected families, during which normal life must be suspended. As a result, substantial delays that characterize the SUPERFUND process guarantee that significant adverse psycho-social impacts will result.

Ranking. At a recent conference, I met a woman who introduced herself as being from the number two ranked site on the NPL. As suggested by this encounter, the social significance of NPL ranking reflects a perverse indication of status, indicated by the proof that one's risks are more important than someone else's. Furthermore, to have one's site highly ranked means that the severity of hazard is confirmed, legitimizing the victim's concerns over contamination. More pragmatically, to have a high ranked site is to have the potential for accelerated action. It may even be comparatively less stressful to have a high ranked site because the heightened perception of risk is offset by the greater potential for timely protection. In this sense, the worst ranking is a marginal one that promises delayed and minimal assistance.

Disabling Process. Although SUPERFUND establishes continuing public access to the decision-making process, it would be premature to assume that SUPERFUND has successfully addressed the disabling aspects of contamination. The public is not substantively involved in consultant selection, in health and remedial investigation studies and in the decisions about cleanup. Public comment, although heard, is not listened to over the views of agency and private experts. SUPERFUND is laced with jargon---RI/FS, RODs, PRPs, etc---which newcomers to the regulatory process may not understand. A thorough understanding

of community impacts of the hazardous site is not required to be established and is, therefore, absent from the information utilized in decision-making. Often the public is not adequately consulted as a source of information about the site. Ongoing opportunities for project oversight and monitoring are minimal for people whose daily lives may be tied to the progress of an RI/FS and cleanup. Although some progress appears to have been made in selecting staff who are more sympathetic to the community, the government effort is weighted toward the technical aspects of the cleanup. Agency officials and private consultants easily become advocates for the process that they have created and the decisions that they have made. In defending their turf, they may not be seen as defending the local public's interest.

Uncertainty. Contamination brings with it demands for answers to specific questions. What are the health risks---not abstractly but for me and my family? What are the boundaries of contamination which divide safe and unsafe places? Will I be able to remain living here? Who will pay for my expenses? If I get sick, will I be able to prove whether it is from the contamination? How long will it be before it is safe? Is it all right to eat the vegetables that I canned last summer? If I want to sell, will anyone buy my land and at what price? By definition, these are hard questions to answer. SUPERFUND serves to diminish some areas of uncertainty, but often the answers to fundamental questions remain unresolved. Victims of contamination look to government to resolve these uncertainties. SUPERFUND may help to increase their expectations that government can do so. These may be unrealistic expectations for the program. However, SUPERFUND must develop ways to be better able to answer the questions that people invariably ask or to gently adjust their expectations if unrealistic.

Defining Clean. A persistent problem has been the choice of the cleanup strategy. Early efforts to remove the community through evacuation or to remove the contamination from the site have not been much used. Instead, the emphasis has been on isolation and treatment of the waste mass in situ. As a result, the community and the contamination site become permanent neighbors. The hazards remain, but in a state of mitigation. This outcome often violates the needs and expectations of residents, namely to regain the pre-contamination conditions of perceived safety and purity of the environment. The cover on the hazardous waste site is easily equated with a "cover up" of the real problems and the site complexity. While residents increasingly appreciate that removal of the wastes from their location to another simply moves the problem to someone else's backyard, to leave them where they lie is to change forever the character of the home and community environment. This pill is a hard one for contamination victims to swallow.

For this reason, residents have a stake in achieving the

highest possible level of cleanup. In contrast, agencies have a stake in stabilizing the situation for the least investment. Consultants seek to perpetuate their agency relationships by successfully limiting the extent of the cleanup. There is, therefore, an inherent conflict between the interests of the agencies and consultants, on one hand, and of both versus the community, on the other. What is expeditious to the agency and consultant may not be acceptable to the person who expects to continue to live nearby the site or who hopes that reestablished confidence due to the cleanup will make their property saleable so they can leave.

A final point here is that it is common to find skepticism and distrust of the cleanup process. The officials and consultants are often not trusted to carry out promised site remediation. Furthermore, the cleanup technology itself may not be trusted to achieve the goal of making the place safe. The GAO has confirmed citizen's doubts about the efficacy of commonly used cleanup techniques (Hembra, 1993). The "cleanup" may neither make the site clean nor remove hazards for nearby residents. The fact that millions are spent at the site does not translate into confidence in the outcome. In fact, activity deemed to be inappropriate only increases the level of distrust and cynicism felt by nearby residents. Thus, residents nearby an Appalachian SUPERFUND site believed that pumping of groundwater, aeration and release to the surface water merely exposed them to hazards that were otherwise underground. They did not believe that the pumping would remove buried wastes, which they thought would continue to leach far into the future. Nor did they believe that they would be able to regain use of their springs and wells. They believed the contamination had spread in the environment beyond the site; thus, treatment at the site could not remove the threat. And, finally, as subsistence hunters, the cleanup did little to restore their confidence that they could hunt and fish the local environment as they did previous to the announcement of the contamination and as their parents and grandparents had before them.

Beyond the possibility that the clean up will be seen as ineffectual, it is not uncommon for the cleanup to create what nearby residents define as a new hazard. Onsite incineration, water treatment and other active means of treatment can create conditions where new pollutants are added to the air, soil and water even as the form or amount of original contamination is reduced or altered. In the community that I studied in the Appalachians, the water treatment plant was a visible reminder of the contamination problem. It added odors to the community that caused some nearby residents to fear going outside. Because it was run by the polluter, residents did not trust the operation; they noted that alarm devices were disabled after the community was initially alerted to problems at the plant. In sum, the treatment plant was viewed as a new source of contamination to

the community, confounding the insult represented by the original dumping of toxic materials.

Distrust. From a public perspective, the SUPERFUND process is easily clouded with distrust. First of all, government may be distrusted because it failed to prevent the contamination to begin with. At many sites, government was the polluter and proceeds as a self-regulator.

Given the impacts of contamination, the response of government as a helper is key to the ability of contamination victims to cope with their changed circumstances. Yet, government has had an exceedingly poor track record in clarifying uncertainties and providing clear information. Additionally, government often provides little concrete assistance, unless emergency action is deemed necessary, such as provision of alternative water sources. The role of The Agency for Toxic Substances and Disease Registry (ATSDR) in conducting health studies has been soundly criticized by citizens and by the GAO (Hembra, 1993). And the SUPERFUND process is generally placed in the hands of private consulting firms who appear to residents to have their own agendas. Often these consultants work for the Potentially Responsible Parties rather than for government, raising legitimate questions on the part of residents about the adequacy of investigation and the choice and execution of the cleanup strategy. The GAO has supported these observations with its own conclusion that Superfund is one of the most likely Federal programs to suffer from fraud, waste, and abuse (Hembra, 1993). Such uncertainty is carried into the expensive and substantive work of SUPERFUND, namely the actual cleanup activities. Here the GAO summarizes findings that suggest "serious questions about the completeness and consistency of cleanup decisions at Superfund sites....Currently available technologies are often expensive, ineffective, or unacceptable to the public." Two of the basic techniques employed in past cleanups are questioned by the GAO---the use of clay caps that fail to isolate the waste mass when they crack and the pumping and treating of groundwater that continues to be contaminated by the original source of pollution (Hembra, 1993, pp.11-12). Finally, efforts to make the polluter "pay" for their actions are often delayed or absent. Such efforts are important in order to right the contamination victims' sense of injustice brought on by this human-caused condition.

Perpetual Jeopardy. In effect, the continued presence of the hazardous site in the community creates a condition of perpetual jeopardy for the residents. They may fear continuing contamination from the site due to remaining or residual materials or due to the cleanup technology, itself. They may fear that the site will be reassessed and new cleanup efforts commenced if the site is deemed unclean and that they will receive more bad news about exposures in the future. They may

fear that the site will become a potential location for new hazardous uses if it is deemed adequately clean but continues to be stigmatized. Latent uncertainty may perpetuate environmental stigma, keeping land values and residential desirability low. And it may be that the residents will never really feel quite safe there. They will always wonder if the mitigations are working and if the hazards are contained. Particularly with invisible contaminants, such concerns are hard to satisfy.

Can such psycho-social impacts be mitigated? If parks and other desirable land uses can be established on the site, will people learn to trust the environment again? Will government studies and a name change---Love Canal becomes Black Creek Village---erase the legacy of contamination? Such mitigations have not been studied as yet. We do not know much about their persistence or generality. The author's experience as a researcher in the Niagara Falls, New York suggests that there is a significant effect due to a community's ecohistorical legacy on trust of the environment (Edelstein, 1992; Edelstein, forthcoming). In my view, the jury must remain out on the ability of communities to recover from contamination events until additional research is conducted that looks at community and family recovery after cleanup activities of different types.

Threat from Deemphasis to the SUPERFUND Program. In the wake of the current interest in relative risk comparison as the basis for regulatory action, hazardous waste cleanup faces possible deemphasis. Comparative risk analysis does not generally include consideration of psycho-social and community health issues. As a result, the issues discussed above are overlooked. There is no consideration for such qualitative issues as how to make communities affected by contamination once-again whole or how to recreate a deserved sense of security among residents living proximate to waste sites. In effect, the social dilemma of contamination is that either one bears the extreme costs of addressing contamination as currently defined or one alters the levels of acceptable risk so that contaminated sites are redefined as "safe." To delay or never complete action under the expectations established under SUPERFUND would perpetuate and perhaps increase psycho-social impacts. To change the rules at this time would mean that residents and communities surrounding the many thousands of private and public SUPERFUND and RCRA sites would be denied the level of protection that they expect to be offered given the level of risk that they already believe to be present. These people will never trust risk redefinition, as evidenced by response to the effort to sanitize dioxin risk in recent years. Thus, changing definitions and priorities might suffice for some future time when new norms have been accepted, but, absent some compelling logic that leads to a virtual consensus behind the reassessment, such actions will cause extreme turmoil during the transition. At risk is the psychological health of perhaps millions of citizens. These

impacts must be factored into the reassessment of risk.

Right-to-Know. In its reauthorized form, SUPERFUND added steps aimed at providing communities with information about environmental hazards, enabling protective actions to avoid contamination. Although I have not studied the Right-to-Know process extensively, this prospective and anticipatory component of the program directly empowers community residents with information necessary to avoid future hazardous waste exposure problems. Yet, as has been noted in the literature on Right-to-Know, SARA Title III stopped short of providing the funding and structure sufficient to enable communities to fully implement the program (see Rich, et. al., 1993). Efforts to extend and enhance the effectiveness of the program can only assist in addressing the psycho-social and community impacts discussed here.

Enabling Community-based research. The TAG grant program within SUPERFUND appears to be an extremely important element. There is clear evidence to suggest that community trust for testing results and for other expert judgments requires an independent basis for judgment that is under independent community control. Community understanding, information and trust is enhanced when advocacy expertise is available to residents Edelstein 1992, 1993).

IMPLICATIONS FOR THE REAUTHORIZATION OF SUPERFUND

Our brief review of the SUPERFUND program reveals that the adverse psycho-social and community impacts associated with contamination are magnified by several aspects of the process. Mitigations for these impact issues need to be built into the revised SUPERFUND. Specifically,

1. Delay may be an inherent characteristic of hazardous waste study and cleanup. Therefore, efforts to avoid the unnecessary prolonging of site remediation should be emphasized, so long as participation and quality are not sacrificed. Even with accelerated processes, however, the remediation effort is going to be lengthy. Therefore, coping measures to assist the community during the duration of the process must be developed and integrated into the program.

2. Similarly, ranking is a practical necessity with adverse consequences for the community. The validity and reliability of ranking should be reviewed to assure the justification of its use. An effective program of communication and support is needed to help communities understand and cope with the question of which cleanups receive priority action and to help communities to expedite action by placing elements of the program under greater local community control.

3. The disabling aspects of the SUPERFUND program need to be

changed so as to enable affected communities to better cope with the issues posed by hazardous waste sites. Specifically, it is proposed that a "parties-of-interest" model (see Edelstein, 1992) be devised that will allow interested community members and officials to play an active oversight and management role in SUPERFUND activities. EPA would be charged with developing a community-accessible process to allow lay people to participate in an ongoing review of the RI/FS and site remediation activities. Such an oversight group would contain representation from all groups having legitimate interests in the cleanup. Agency officials and consultants would meet with the group on a regular basis in open meetings. Unlike the more formal public hearings and presentations currently used in the process, which the parties-of-interest group would augment, the proposed meetings are designed to allow for a full discussion and interchange of ideas and concerns and for intensive questioning.

The process is not intended to be adversarial, but rather to establish communication links and information feedback that will provide for citizen access, understanding and input. Discussion of this type will assist consultants and the agency in their understanding of the site, the community issues surrounding it and in what decisions make the most sense for the site. In this way, issues affecting the speed and quality of the cleanup, for example, can be discussed. Where possible, citizen input can be sought for decisions that may contribute to delay. The group will allow for discussion of accelerated actions. Furthermore, the parties-of-interest group can be empowered to take steps to expedite cleanup. With well-designed agency support, the groups might even be given control over aspects of the cleanup project and subsequent monitoring, providing a greater stretch for EPA and state agency officials.

4. Intensified opportunities for involvement in the nuts-and-bolts of cleanup decision-making will help community members to work through the uncertainties of the situation. Because agencies and consultants routinely make assumptions about uncertain factors, residents will be able to see and participate in the shaping of these surrogates for actual knowledge.

5. The level of proposed involvement will be particularly useful in providing for fuller communication about the level of cleanup sought for the site. Agency personnel and consultants will be able to explain fully the logic of their actions in a format allowing for debate and questioning. Trade-offs and limits to the actions possible can be discussed so that the community understands the logic---even if members of the community do not agree. Furthermore, by inviting the community into the process, better decisions about cleanup may be achievable because issues will have to be thought through in clear language and beyond professional assumptions that are not always correct. Finally, once determined, there is a greater chance that community members

will "own" the decision, finding it to be an acceptable---if not perfect---response to the restoration of their community.

6. Involvement will also allow for monitoring and review activities by community members, providing a basis for authenticating the actions of agency officials and consultants. On the one hand, such monitoring and oversight may lead to the appropriate challenge of decisions or actions that might have otherwise been overlooked. On the other, the monitoring activities may lead to confirmation. In either case, the oversight role gives the community a basis for independent control and action. It provides for a foundation of trust because citizens will have their own input and information. The development of continuing monitoring and evaluation activities with public input will provide for long term as well as short term feedback, a necessary basis for continuing trust.

7. Public confidence in the cleanup process, based upon full involvement and knowledge, is the basis for addressing the question of perpetual jeopardy. Perpetual jeopardy occurs under current practice because sites that are "cleaned" and "closed" are viewed as continuing sources of unknown threat. Knowledge is unlikely to make problems disappear; rather it will serve to force continuing action until problems are resolved to the satisfaction of the community. While it is true that environmental stigma associated with the site may diminish more quickly if there is less "visibility" of issues relating to the hazardous site, the only way to address the perpetual jeopardy issue in the end is full disclosure that allows for complete action or at least an understanding of what is left undone at the site.

8. The process described here also addresses the broader issue of how much emphasis should be placed upon the risk from hazardous waste sites. By involving the community actively in the health study process, in risk assessment questions, etc., the full current and future impacts can be better understood by all. Decisions about how far to go and how much to spend can be based upon local input and participation in a trade-off process. Rather than putting the debate over priority and risk into the hands of scientists centrally gathered in Washington, that debate can be moved out into the community, where it belongs.

9. There is an obvious feed-forward to the Right-to-Know process from the parties-of-interest approach described here. The process under SUPERFUND of addressing existing hazardous waste sites can help to create the public knowledge, concern and competence to make it possible to avoid future contamination issues. SUPERFUND needs to help build the local institutional base for waste-avoidance. SARA Title-III provides the elements, but lacks the context. Therefore, an important agency function under the SUPERFUND reauthorization should be the active support

for local anticipatory environmental action groups. Such groups, perhaps non-profit organizations, can actively assist in the parties-of-interest process at existing contamination sites as well as in activities aimed at avoiding future contamination. The author has been experimenting with these issues for many years. There is an enormous potential for widespread community education based on such groups.

10. Finally, what is the role of community-based research in the enablement of local people by SUPERFUND? As recognized in the TAG grant program, outside expertise is essential for local people to fully understand and trust decisions and actions taken under the SUPERFUND process. Yet, TAG grants are minimal in size, particularly given the expense involved in environmental research activities and the going rate for consulting.

In my own experience, I have observed that community-based expertise can help make sure that community-people focus their concerns on the most serious issues. Often, such expertise brings crucial points-of-view to decision-making that both agency officials and consultants may overlook. With the advise of their own consultant, community people may agree with agency actions that otherwise they might have distrusted. The additional opinion of the community consultant may help to confirm or disconfirm, to legitimize or call into question or to suggest new and innovative paths for consideration that lead to better outcomes than suggested by the conventional process. Community consultants tend to ask different questions than those asked by consultants who work for industry and government. They frequently propose different answers, as well. For example, on the matter of the health surveys required by SUPERFUND, serious refinement of the health survey process should be informed by community people and their consultants.

Finally, it should be recognized that a key function of the community consultant is to provide independent peer feedback. While science is driven by peer review, decisions in the SUPERFUND process are often made with minimal peer debate. Research activities are not supervised or critiqued with anything approaching the intensity of peer review. As a result, lax, invalid and unreliable approaches can easily be employed. The community consultant, thus, provides one important avenue to assure that there is a careful scrutiny of the process, particularly given the degree to which agency personnel may be stretched. Absent this scrutiny, there may be little confidence in the recommendations and actions.

Therefore, it is proposed that:

(a) the community consultant process now under TAG be expanded in order to assure that citizens have access to expert advise throughout the duration of the SUPERFUND process;

(b) funding and support programs be created at Universities and Colleges---or at non-profit-organizations---in order to enable reasonably priced expertise to become available to citizens;

(c) the role of advocacy expertise should be legitimated, recognizing that unless experts are available to advocate the concerns and interests of the local community, that agency officials and outside consultants may overlook those interests;

(d) peer review mechanisms for all of the expert functions involved in the SUPERFUND program should be established so as to provide independent criticism and overview of the work of experts;

(e) the community should be enabled by such peer review and use of independent advocate experts to confirm or disconfirm the research, conclusions and actions taken at hazardous waste sites over the duration of the SUPERFUND project and for a reasonable monitoring period thereafter.

CONCLUSIONS

Psycho-social impacts of contamination persist in affected communities and become an important consideration for the success of the SUPERFUND program in two ways---SUPERFUND's success requires trust and participation on the part of the community and the conduct of SUPERFUND can promote or defeat the presence of such trust and participation. Psycho-social and community impacts are a vital criteria for the redesign of the SUPERFUND program and for its ongoing monitoring and evaluation. SUPERFUND can serve as an important tool for enabling communities to cope with contamination and to recover, or it can be part of the disabling loss of control and continuance of environmental hazard that contamination represents for hundreds of thousands of citizens across this country.

REFERENCES

Baum, Andrew, Raymond Fleming, and Jerome Singer. "Coping with Victimization by Technological Disaster." Journal of Social Issues., 39, No.2, 1983, pp. 117-138.

Edelstein, Michael R. "Social Impacts of Al Turi Landfill, Inc." Report prepared for the Town of Goshen, New York, 1980.

Edelstein, Michael R. "The Social an Psychological Impacts of Groundwater Contamination in the Legler Section of Jackson, New Jersey." Report to the law firm Kreindler and Kreindler, 1982.

Edelstein, Michael R. "Disabling Communities: The Impact of

Regulatory Proceedings." Journal of Environmental Systems. 16(2):87-110, 1986/87.

Edelstein, Michael R. Contaminated Communities: The Social and Psychological Impacts of Residential Toxic Exposure. Boulder, Co: Westview Press, 1988.

Edelstein, Michael R. and Wandersman, Abraham. "Community Dynamics in Coping with Toxic Exposure," pp. 69-112 in Irwin Altman and Abraham Wandersman (Eds.), Neighborhood and Community Environments, Volume 9 in the series Human Behavior and the Environment. N.Y.: Plenum Press, 1987.

Edelstein, Michael R. "Mitigating Environmental Stigma and Loss of Trust in the Siting of Hazardous Facilities" for the Yucca Mountain Studies Series, U.S. Department of Energy, 1992.

Edelstein, Michael R. "When the Honeymoon is Over: Environmental Stigma and Distrust in the Siting of a Hazardous Waste Disposal Facility in Niagara Falls, New York." Research in Social Problems and Public Policy. Forthcoming.

Erikson, Kai. "A New Species of Trouble," pp. 11-30 in Couch, Stephen R. and J. Stephen Kroll-Smith, (Eds.). Communities at Risk: Collective Response to Technological Hazards. N.Y.: Peter Lang, 1992.

Gill, Duane and J. Stephen Picou. "Toxic Waste Disposal Sites as Technological Disasters," pp. 81-98 in Dennis Peck, (Ed.). Psychosocial Effects of Hazardous Toxic Waste Disposal on Communities. Springfield, Ill.: Charles Thomas, 1989.

Fowlkes, Martha and Patricia Miller, "Love Canal: The Social Construction of Disaster." Report to the Federal Emergency Management Agency, 1982.

GAO, "Superfund: EPA Action Could Have Minimized Program Management Costs." GAO/RCED-93-136. June 1993.

Gibbs, Margaret. "Psychological Dysfunction in the Legler Litigation Group." Report to the law firm of Kreindler and Kreindler, 1982.

Hembra, Richard, "Superfund: Progress, Problems, and Reauthorization Issues." Testimony Before the Subcommittee on Transportation and Hazardous Materials, Committee on Energy and Commerce, House of Representatives. GAO-RCED-93-27. April 21, 1993.

Hallman, William and Abraham Wandersman. "Perception of Risk and Toxic Hazards," pp. 31-56 in Dennis Peck, (Ed.). Psychosocial Effects of Hazardous Toxic Waste Disposal on Communities.

Springfield, Ill.: Charles Thomas, 1989.

Levine, Adeline G. Love Canal: Science, Politics and People. Boston: Lexington Books, 1982.

Rich, Richard, W.D. Conn,, and William Owens. "'Indirect Regulation' of Environmental Hazards Through the Provision of Information to the Public: The Case of SARA, Title III." Policy Studies Journal, 21, 1, 1993, pp. 16-34.

APPENDICES:

SELECTED BIBLIOGRAPHY OF BOOKS IN THE FIELD
VITA: Michael R. Edelstein, Ph.D.

SELECTED BIBLIOGRAPHY OF BOOKS IN THE FIELD

Brown, Phil and Edwin Mikkelsen, No Safe Place: Toxic Waste, Leukemia, and Community Action. Berkeley: University of California, 1990.

Clarke, Lee. Acceptable Risk?:Making Decisions in a Toxic Environment. Berkeley: University of California Press, 1989.

Couch, Stephen R. and J. Stephen Kroll-Smith, (Eds.). Communities at Risk: Collective Response to Technological Hazards. N.Y.: Peter Lang, 1992.

Edelstein, Michael R. Contaminated Communities: The Social and Psychological Impacts of Residential Toxic Exposure. Boulder, Co: Westview Press, 1988.

Goldsteen, Raymond and John Schorr. Demanding Democracy After Three Mile Island. Gainesville, University of Florida Press, 1990.

Kroll-Smith, J. Stephen and Stephen R. Couch. The Real Disaster is Above Ground: A Mine Fire and Social Conflict. Frankfort: The University of Kentucky Press, 1990.

Levine, Adeline G. Love Canal: Science, Politics and People. Boston: Lexington Books, 1982.

Peck, Dennis (Ed.). Psychosocial Effects of Hazardous Toxic Waste Disposal on Communities. Springfield, Ill.: Charles Thomas, 1989.

Reich, Michael. Toxic Politics: Responding to Chemical Disasters. Ithica: Cornell University Press, 1991.

Vyner, Henry. Invisible Trauma: The Psychosocial Effects of the Invisible Environmental Contaminants. Boston: Lexington Press, 1987.

Testimony
of
Warren J. Razore
President, The Rabanco Companies
Seattle, Washington
before the
Senate Committee on Environment and Public Works
Subcommittee on Superfund, Recycling and Solid Waste Management

Mr. Chairman, members of the Subcommittee. Thank you for giving me the opportunity to make this statement for the record of the Committee's hearing on Superfund liability issues.

My name is Warren J. Razore. I am President of Rabanco located in Seattle, Washington. As an appendix to this testimony, I am attaching the testimony I presented at the August 16, 1993 meeting of the Superfund Evaluation Committee of the National Advisory Council on Environmental Policy and Technology.

In this testimony, I will focus my remarks on the adverse impacts which the Superfund liability regime visits upon the small and medium sized businesses of this Nation, in terms of their ability to equitably compete in their chosen fields. I will offer a perspective of what it is like for a private solid waste company to try to survive the inequities of a competitive market driven by this flawed statute.

The principals of Rabanco have been serving the solid waste management and disposal needs of the Seattle area since 1929. We currently operate the Roosevelt Regional Landfill, a new state of the art landfill for RCRA Subtitle D wastes, which is served by the largest solid waste long-haul rail transportation network to be found in the United States, an efficiency which allows us to provide an environmentally secure service to our customers at significantly reduced rates. Roosevelt Regional Landfill, located in Klickitat County in south central Washington, can serve all of the Pacific Northwest, with the capability to serve markets in California and elsewhere. Although the site combines the necessary geology, climate, and engineering features to ensure a stable and safe environment for the disposal of solid wastes over its 40 year life, we have purposely made additional investments which reach beyond EPA's baseline requirements to create an even more secure disposal environment.

The landfill operations, in combination with the available rail transport system, are so efficient that the mere availability of our service in parts of California drove the tipping fees at local landfills down by more than one third — about $20/ton. The consumer benefits due to competition in the marketplace are obvious.

Rabanco competes, within the region we serve, with the large multinational corporations on one hand, and the smaller regional and local operations on the other.

The principals of Rabanco have, during the last seven decades, utilized numerous landfills for our operations. Our actions were always within the law and carried out in a manner which society believed was acceptable, providing a service which was environmentally necessary. Despite our best intentions, we now find ourselves, along with some of our competitors, involved in three Superfund sites. The necessity to enter into legal negotiations with competitors of varying sizes has led us to discover some rather startling ramifications which we do not believe were foreseen by the drafters of Superfund. While Vice President Gore speaks of the advantages of environmental management for small businesses — a principle that we generally agree with — our experience with Superfund is just the opposite.

First, the unknown and unlimited levels of liability which are encountered, while a burden to all, competitively benefit the larger entities to the detriment of the smaller participants. The ratio of an established liability to an entity's net worth makes the escalation of the estimate of the costs of cleanup relatively more painful for the small company. Superfund liabilities are particularly troublesome since they are ill defined and always tend to grow with time. The disturbing but logical conclusion derives that it is in the interest of a larger company to establish potential liability, at a site where they are joined with smaller competitors, at as high a level as they can reasonably sustain since it will have a relatively greater impact on their smaller competitor.

The larger national and international corporations, which can outlast their smaller competitors in the Superfund process, gain a significant advantage in the marketplace by draining the smaller companies' financial resources through deliberate delay and inflation of transaction costs. The more a company can afford to spend on lawyers and consultants (transaction costs), as compared to their competitors, the more of an advantage they achieve over their competitors. This leads to the escalation of transaction costs in situations where one competitor might wish to take over the market, or even the operations, of another.

A corollary advantage exists for the larger companies regarding legal actions to bring in additional Potentially Responsible Parties (PRPs) at a Superfund site. As each of you are aware, if we are named as a PRP, we can in turn bring action against our customers for whom we supplied services. However, aside from the distasteful prospects of passing an inequitable retroactive liability on to people who used our services in good faith, from a business standpoint, the smaller a company is — the smaller its service area — the less it can afford to offend its past and future customers by bringing legal actions against them. A company with a nationwide customer base is not so constrained.

Finally, even where there is no direct involvement of competitors in particular Superfund actions, it is still in the interests of the larger companies to retain the liability regime at as onerous a level as they can. Smaller companies will find themselves unable to meet the financial obligations that are imposed by strict, joint and several, and retroactive liability, and as one might expect, the smaller the company, the quicker, all other things being equal, it will go under. The larger companies will prevail and reap the benefits. When they stand alone, they can inflate their rates to cover all potential liabilities.

The municipal solid waste management industry is not the only commercial segment in which this hypothesis holds true. For any section of industry which has competition between entities of various sizes and which may become involved in Superfund, the same principles will hold. Is it any wonder then that the representatives of the major companies — the representatives that you have heard — are satisfied with the status quo on retroactive liability?

In the end, the public will suffer if there is a lack of competition. Costs will rise and levels of service will fall. The Nation's economy will also suffer. The Treasury Department's proposal to eliminate strict, joint and several, and retroactive liability is based on such concerns for the Nation's economic growth and stability. If continued competition is desirable, the survival of the private segment of industry is essential .

Cities and towns, in cooperation with state governments across the country are cleaning up and closing municipal solid waste sites in ways which make a lot of sense. The federal government might learn from local government's approach which, in most cases, makes equitable assessments of present and future disposal, sensitive to equity among all those involved in the landfill. The environment benefits because real work gets done on the problem and not on the process of its solution. It is simple, direct, fair and works — in a way that is fair to all companies, big or small.

I ask you to consider these arguments as you move towards Superfund re authorization. Would we not be better off to fund the cleanups of past Superfund sites, especially landfills for municipal solid wastes, out of revenues which could be generated from equitable assessments on present and future disposal? The costs would be apportioned in accordance with volumes disposed, and operating companies would have a basis for estimating their capital needs. No one segment of an industry would be put at an artificial disadvantage based on size.

Thank you for your time and consideration.

WRITTEN TESTIMONY OF WARREN J. RAZORE

BEFORE THE

NATIONAL ADVISORY COUNCIL ON ENVIRONMENTAL POLICY AND TECHNOLOGY

SUPERFUND EVALUATION COMMITTEE

AUGUST 16, 1993

RABANCO COMPANIES
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My name is Warren J. Razore. I am President of the Rabanco Companies of Seattle, Washington. I will offer a perspective of what it is like for a private solid waste company to try to survive the inequities of a fundamentally flawed law which holds hostage the small and medium sized businesses of this Nation, while failing to protect human health and the environment.

We are a privately owned business which has been serving the solid waste management and disposal needs of the Seattle area since 1929. We currently operate the Roosevelt Regional Landfill, a state of the art regional landfill for RCRA Subtitle D wastes, which is served by the largest solid waste long-haul rail transportation network to be found in the United States.. This landfill, located in Klickitat County in south central Washington, can serve all of the Pacific Northwest, with the capability to reach into California. The site combines the necessary geology, climate, and engineering expertise to ensure its stability and safety for the foreseeable future.

The principals of Rabanco have, during the last seven decades, utilized numerous landfills for our operations which were, and have always been, within the law and carried out in a manner which society believed was acceptable, providing a service which was environmentally necessary.. The fact that, much later in history, the activities have been reevaluated and are now subject to different standards should not carry with it a stigma of culpability.

My first experience with Superfund was as President of a land company which allowed the Boeing Company to dispose of solvents and oil on a parcel of property it owned from 1954 to the mid 1960s. The Boeing Company has acted very responsibly in this case and covered about 90% of all costs since the date of the site listing on the NPL. My concern was first raised when an initial consultant's contract for a focused feasibility study, which was budgeted for $1.5 million, was eventually completed for $7.5 million. I remember wondering how could this happen? The only answer I could get from my advisors was that once a site is branded "Superfund" budgets don't mean much. It is now estimated that the total project costs, including legal, consultants and on-site work will exceed $100 million. The fees Boeing paid our company for dumping their material came to less than $300,000.

More recently, two of my collecting companies, which were purchased after the subject activities, were named as PRPs by the City of Seattle because we transported municipal solid waste to one of the City's landfills that they operated from 1964 to 1982. Although we and the other listed PRPs delivered only 5% of the total volumes to the site, the current Superfund law allows a subjective choice of PRPs and allocation of responsibility. In their allocation, the City attorneys allocated the named PRPs 12% of the costs. For delivering and paying for disposal of

14,000 tons of waste at this site, I am now going to pay over $800,000 more. We are advised that we now can seek reimbursement from our customers who were the generators of the waste. I ask you, how can any businessman, in good conscience, go back to his customers and ask for reimbursement when those customers entrusted their wastes to our company which, in turn, took it to a licensed municipally-run facility? Neither we nor the City of Seattle, the operator, were doing anything but using the accepted technology for collection and disposal at the time. To seek a back charge now is morally deficient and wholly lacking in equity.

Most recently, my father and a partner were notified that they were going to be named PRPs on a site they operated from 1964 to 1979
The Tulalip Landfill began as a project with two objectives: first, to reclaim wetlands for future development – in the 1960s reclamation was a desirable goal – and also, as a location to take commercial solid waste from the Seattle area. As you may be aware, commercial solid waste is usually less of a problem than municipal solid waste by an order a magnitude. In the 1970s, the loss of wetlands was recognized to be a problem and we voluntarily entered into a Consent Agreement with EPA to complete disposal at the site and close it over a period of two years. The closure was completely carried out by 1979, certified and our bond returned. Years later, EPA, under a Clean Water Act permit, authorized the U.S. Navy, the landowner, and others to operate the site from 1986 through 1990 for disposal of more than 200,000 cubic yards of demolition rubble on top of the capped landfill. The permit was never adhered to nor enforced. In 1992, based on analyses carried out in 1988 while the EPA authorized dumping was going on, EPA proposed the site for the National Priority List and named, as PRPs, six of the parties who used the site during our operation. None of the post closure users were named. We are engaged in negotiations with the Region aimed at an agreement to conduct a Remedial Investigation/Feasibility Study, even though the site has been proposed but not listed on the National Priority List. Last week EPA gave us an ultimatum to sign, within a few hours of receiving a 38 page final draft, an agreement to lead a Remedial Investigation/Feasibility Study on that site which will cost more than $5 million. My father faced a dilemma, if he did not sign on to perform the Remedial Investigation/Feasibility Study, he faced having EPA perform a gold plated study at his expense. This was the choice, even though EPA has failed to supply us with the record that justifies its decision to propose listing of this site. We believe the Region needs this cleanup to be carried out under the Superfund Accelerated Cleanup Model as a Presumptive Remedy in order to meet numerical program management targets, despite the fact that EPA's own files note that there is no imminent threat to human health or the environment. While the objectives of these administrative innovations to expedite cleanups and reduce cost sound laudable, the hostile tactics and often emotional behavior of the Regional staff in bullying PRPs into forfeiting their rights has rendered them moot. As long as EPA continues to dwell on artificial goals and "bean-counting" exercises, instead of giving priority to

protecting human health and the environment, administrative reforms are doomed to failure.

There is no doubt that the Superfund program is not operating properly. Enormous amounts of money are being wasted and sites are not being cleaned up. A new bureaucracy continues to grow and legions of lawyers grow wealthy at the Nation's expense. The primary cause for these failures is the liability scheme which is incorporated in the Superfund legislation. It is magnified by the callous manner in which EPA administers the program.

The Bermuda Triangle of the EPA, the technical consulting community and the lawyers are not producing the environmental values our society wants. It produces cost without product.

The retroactive, strict, joint and several liability contained in CERCLA has impacted, and continues to impact, on organizations such as ours in a way that is antithetical to both good public policy and the Nation's economic growth. More and more sites with lesser threats to the environment are being added to the National Priorities List without recognizing that these lesser sites may be remedied at far less cost than those imposed in the very litigious and transaction cost intensive Superfund process.

You have will hear, again and again, that the retroactive strict liability of Superfund is unfair and unprecedented in history of environmental legislation. I agree. You will also hear that joint and several liability is unfair and places a party at risk entirely out of proportion to the damage he has caused, even having operated totally within the law using accepted standards of care. I also agree with that. Both of these inequities are exacerbated by the brute force manner in which EPA carries out its program management. You have been told that EPA is now carefully trying to involve as many PRPs as possible in the initial phases of cleanup, yet in the Tulalip Landfill situation they have refused to consider naming as PRPs any of the parties who used the site after we closed it, even though they were in violation of an existing permit. They have also refused to consider the use of alternative enforcement mechanisms, available under the Clean Water Act, even though using those mechanisms would result in a quicker and less costly solution without the litigation based transaction costs. We believe that their refusal is based on a need to meet arbitrary numerical program targets.

What are the results of having this type of liability regime? Organizations, companies, even individuals are forced to hire lawyers and consultants and analysts to check EPA's work; to sue EPA; to defend themselves from suits by EPA; to sue other organizations, companies, and individuals who might have been involved in disposal; to defend themselves from suits by those parties; etc.; etc.; etc.. Why? Simply because the nature of the liability mechanism means that a company

such as ours has no other way of protecting itself from EPA or other parties. Even if we voluntarily undertake a cleanup at EPA's direction, and with full EPA approval, EPA might, at some time in the future decide that they want more, or different, remediation to be done. Superfund establishes the precedent for future experimentation using retroactive liability as a convenient funding mechanism.

The only limit that exists on the liability is the value of the parties' assets. The larger national and international corporations, which can outlast their smaller competitors in the Superfund process, gain a significant advantage in the marketplace by freezing their competitors ability to raise capital with which to grow and remain viable, and which is necessary to provide for rational investments in cleanup activities.

In the best of circumstances, the unknown and unlimited levels of liability adversely impact our ability to continue to provide or invest in the level of environmentally acceptable service to which our customers have become accustomed. Our current operations fully comply with RCRA and are a model which can and should be used worldwide. They are so efficient that the mere availability of our service in parts of California drove the tipping fees at local landfills down by $30/ton. We provide a valuable service and because of competition we provide it at reasonable rates. The survival of the private segment of the industry is essential if continued competition is desirable to assure low costs and responsible service.

What is the effect of the liability regime on the Superfund program in general? The liability regime is counterproductive for it as well. Since each party must maximize his own protection, they are unwilling to enter into negotiations. Allocations of costs among PRPs take months. Litigation and negotiation take years. Transaction costs – and cleanup costs – skyrocket. Cleanups are delayed for decades. Human health and the environment are not only not protected, they do not appear to be a priority. Litigation and negotiation of responsibility become the focal points of a process which is driven by the legal community.

Elimination of retroactive liability is justified and efficient, since it would eliminate most of the "transaction costs" which are estimated to account for almost 1/2 of the total spending on Superfund related activities. Opponents to the elimination of strict retroactive liability argue that the principal of "polluter pays" would be violated, and that the costs would be transferred to the government at a time when we have extraordinary budget problems. The fallacy of "polluter pays" is exposed based on the fact that most municipal landfills were operated within the law.

Crediting of retroactive liability with creating a "better environmental ethic" is not supportable in the real world. Present and future operations will be determined by the laws in effect at the time of the activity. Does Superfund retroactive liability encourage us to operate the RCRA Subtitle

D Roosevelt Regional Landfill better? No. We operate the landfill to meet and exceed current law and regulation. If we were to operate based on the lessons of Superfund, we would close the landfill for fear that some future Congress, in conjunction with some future EPA, would make retroactive changes to the RCRA Subtitle D requirements and open us up to a new unanticipated, unlimited, liability. Businesses cannot operate on the basis of a crystal ball determination of what some future Congress or Administration might bring. To do so would chill all innovation, new competition, and enterprise itself. The only safe path would be to do nothing.

As to the "transfer of cost" argument, the opponents ignore the fact that, regardless of who pays, the economic impacts, in a macro sense, are the same – money is transferred from other activities into Superfund. If the costs can be reduced by 1/3 to 1/2, the people of the United States benefit. If a new, or enlarged, stable funding mechanism is established, the transfer does not cost the government anything. There will be new funds received from the residential, commercial, industrial, and waste disposal sectors which will pay for the cleanups through what I envision as a nominal tonnage surcharge, implemented by EPA, on solid wastes taken to all of the 6000 or so permitted RCRA sites throughout the country. A similar mechanism could be used for hazardous waste disposal, but at a higher rate per ton because of the smaller volumes. The costs will, in turn, be dispersed through the economy, as they are today, but at a lower level since most of the transaction costs will be eliminated. If the fund is established "off budget" the effect on the deficit will be non-existent. Since the current Trust Fund is "on budget", the receipts from the taxes are revenue raisers and therefore reduce the deficit and the expenditures from the Fund increase the deficit. Therefore, the current strong pressure for deficit reduction means that the taxes are good but expenditures for cleanup from the Fund are bad. This is counterproductive and does nothing to solve the problem.

The only remaining reason to retain retroactive liability is to punish "polluters". How can punishment of businesses who had no intent to do anything wrong, who did nothing illegal, who, in fact, were acting properly, and who were performing valuable services possibly be condoned as equitable and proper.

The net result of the current liability scheme is a program which has not and cannot meet its objectives of protecting human health and the environment because it is hopelessly entangled in litigation brought about by parties who have no other choice than to fight legally a liability system which can put them out of business.

If the true intent of Superfund is to protect the nation's health and environment, the cleanups which need to take place should be achieved through a non adversarial mechanism, a government program funded by a stable source. This would eliminate the artificial goals associated with

arbitrary program management targets and allow decisions to be based purely on sound technical and scientific analysis of risks, costs, and benefits. EPA, with public input, could then realistically determine which sites should be addressed first, what level of cleanup standards should be met, and what innovative technologies are worth trying, without getting involved in the rancor and inefficiencies of litigation. PRPs on sites which predate the legislation would be liable only to the extent that there was demonstrable wrong doing.

Liability of a party for actions occurring after the enactment of CERCLA should be proportional to the contribution of that party to the problem. EPA should be required to establish the total future liability for the site at some point early in the process, so that the PRPs can plan for this additional burden in their operating costs.

Vice President Gore emphasizes the economic development potential of environmental clean-up. He says new and small business across the country can flourish while, at the same time, we "do the right thing."

The current Superfund regime has just the opposite effect. Smaller companies like ours cannot succeed when our ultimate costs are unknown. This is a bizarre marketplace which retards the development of a real environmental industry. In addition, properties which have great potential economic development value to communities are tied up for years in legal wrangling over responsibility. This is not a marketplace of future opportunity but an economic Gulag which rewards the very large multi-nationals with the financial capacity to wait out the system and reach the end-game and sends into obscurity the smaller regional firms who need reasonable certainty to function.

The current process for allocating liability must be replaced by one of professional mediation with a clear priority on environmental remediation. This process needs to cast out the idea that retroactive punishment somehow creates future environmental value.

I suggest that you call for an 18-month moratorium on all new projects except ones with <u>immediate</u> threat to human health and safety, similar to Administrator Browner's recent moratorium on hazardous waste incinerators. During that time, an objective review should be conducted to allow for a cost effective, equitable, environmentally sound replacement for Superfund. I cannot overemphasize the importance of this, because if you don't take a strong, definitive action promptly, you are placing the private companies of this country in a very tenuous financial position for which (in most cases) they are innocent victims.

Administrator Browner and Bill Drayton, at an earlier meeting of this Committee, encouraged you to be innovative in your deliberations, to "color outside the lines". You must. The problems of Superfund cannot be cured by tinkering at the margins: the program must be reinvented if

it is to work properly, and the reinvention must start with elimination of the retroactive strict liability.

Thank you for your time and consideration.

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